CP-134U Series User's Manual

Industrial 4-Port RS-422/485 Serial Board for Universal PCI Bus

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CP-134U Series User's Manual

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1

Introduction

Welcome to the MOXA CP-134U Series of industrial 4-port RS-422/485 serial boards for the PCI bus. Moxa's Universal PCI CP-134U series meets the new slot standard for expansion boards, and works with both 3.3V and 5V PCI slots. The CP-134U series offers 4 independent RS-422/485 serial ports for connecting data acquisition equipment and many other serial devices to a PC and compatible systems. It provides a reliable communication link (RS-422/485) over a long distance (up to 4000 ft), and is suitable for industrial environments.

The following topics are covered in this chapter:

- **Overview**
- **Features**
- **Package Checklist**

Overview

Industio—The Industrial Multiport Async Solution

Moxa *Industio* products are smart, multiport serial I/O solutions for industrial applications. The **CP-134U Series boards**, including **CP134U-I** and **CP-134U**, are designed for a 32-bit PCI bus with the **Plug and Play** and **Universal PCI** feature. The ports for these boards can be configured independently, with ports 1 and 2 set to the RS-232, RS-422, or RS-485 interface, and ports 3 and 4 set to the RS-422 or RS-485 interface. Industio products provide a reliable communication link over a longer distance (up to 4000 ft for ports set to the RS-422/485 interface), and are suitable for industrial environments. Connections with **point-to-point full-duplex** (RS-422 or 4-wire RS-485) or **multi-drop half-duplex** (2-wire RS-485) are available to meet user's various needs. And each RS-485 port can control up to 32 devices in a multi-drop environment.

ADDC™ (Automatic Data Direction Control) for RS-485

To make it easier to manage 2-wire RS-485 half-duplex connections, ADDC™ (Automatic Data Direction Control) intelligence is built into each CP-134U series board, eliminating the need for software interference. This means that Windows applications can manage RS-485 ports without needing to write extra code for controlling the half-duplex protocol.

With their well-designed and fine-tuned device driver, CP-134U boards make full use of the 128 byte Tx/Rx FIFO and on-chip H/W and S/W flow control, so that they can transfer data without loss even at speeds as high as 921.6 Kbps, providing a reliable, high performance solution for serial multiport communications.

Termination Resistors Ready for RS-422/485

Termination Resistors are already installed on the CP-134U series boards, eliminating the headaches involved in determining the proper impedance for the resistors. For more details, refer to the "Connection Cable and Cable Wiring" chapter.

Surge/Isolation Protection

To prevent boards from being damaged by lightning or high potential voltage, **TVSS** (Transient Voltage Surge Suppressor) technology is included in some models to protect the board. An optical isolation option (2000V), and embedded surge protection (max. ESD of 16 KV, max. EFT of 2 KV) are also available in this series. Both of these features provide protection when the boards are used in critical or harsh factory-type environments.

PCI Solution

The board complies with PCI Spec. 2.1 and does not require either switches or jumpers. The hardware configuration for the IRQ and I/O address is automatically assigned by the PCI BIOS. This means that the board MUST be plugged into the computer first before installing the driver software. For more PCI information, refer to the **Technical Reference** Appendix.

Universal PCI

The 32/64-bit PCI local bus specification specifies both 3.3V and 5V connector types for the PCI hardware. Moxa's universal PCI card allows the user to plug into both a 3.3V/5V and 32/64-bit slot.

Operating System Support

The CP-134U series is compatible with most major industrial platforms, including Windows 2000/XP/2003, Windows NT, Windows 95/98/Me, DOS, and Linux. **MOXA device drivers** are provided for smoother installation, configuration, and performance. In this manual, sections for MOXA **Windows 2003, Windows 2000/XP, Windows NT, Windows 95/98, DOS, Linux, and SCO** are included.

MOXA Serial Comm Tools

For application development, MOXA provides an easy-to-use serial communication library called PComm that runs under Windows NT/2000/XP/2003 and Windows 95/98. You can use this library to develop your own applications using Visual Basic, Visual C++, Borland Delphi, etc. Utilities, such as Data Scope, Monitor, Terminal Emulator, Diagnostics, etc., are included for debugging or monitoring the communication status, terminal emulation, or even file transfer.

Board Applications

The board is suitable for many industrial applications, including:

- Multipoint data acquisition
- Factory automation
- Critical industrial control
- Remote serial device control

Features

The CP-134U Series includes the following products:

CP-134U V2 4 RS-422/485 ports, Universal PCI interface with embedded Surge Protection (16 KV ESD)
CP-134U-I V2 4 RS-422/485 ports, Universal PCI interface with embedded Surge Protection and Isolation Protection (16 KV ESD, 2 KV Isolation)

Below we list the outstanding features of the CP-134U Series boards:

- Supports 4 independent serial ports—2 ports for RS-232 or RS-422/485, and 2 ports for RS-422/485
- Compact board size (half-size)
- Jumpers for selecting between RS-232 and RS-422/485
- DIP Switches for selecting between RS-422, 4-wire RS-485, and 2-wire RS-485
- DIP Switch for RS-485 data control—ADDC™ (Automatic Data Direction Control)
- Jumper for Termination Resistor selection—eliminates impedance matching headaches
- Reliability—high speed MOXA UART(16550C compatible) Communication Controllers with on-chip hardware and software flow control to guarantee no data loss
- PComm Lite—a powerful serial Comm utility.
- Embedded Surge Protection (16 KV ESD) for all signal lines (CP-134U-I, CP-134U)
- Supports 128 byte FIFO Driver
- Supports drivers for most major industrial platforms—Windows 2000/XP/2003, Windows NT, Windows 95/98/ME, DOS, and Linux
- Supports both 3.3V and 5V connector types

Package Checklist

The following items are included in the CP-134U Series package:

- CP-134U Series 4-port serial board
- MOXA software CD-ROM, which includes:
  - Drivers for MOXA Multiport Async Products
  - User's Manual (PDF format)

2

Hardware Installation

You will need to install both hardware and software for CP-134U Series boards. The hardware installation procedure is given in this chapter, and the next chapter deals with software installation for various operating systems.

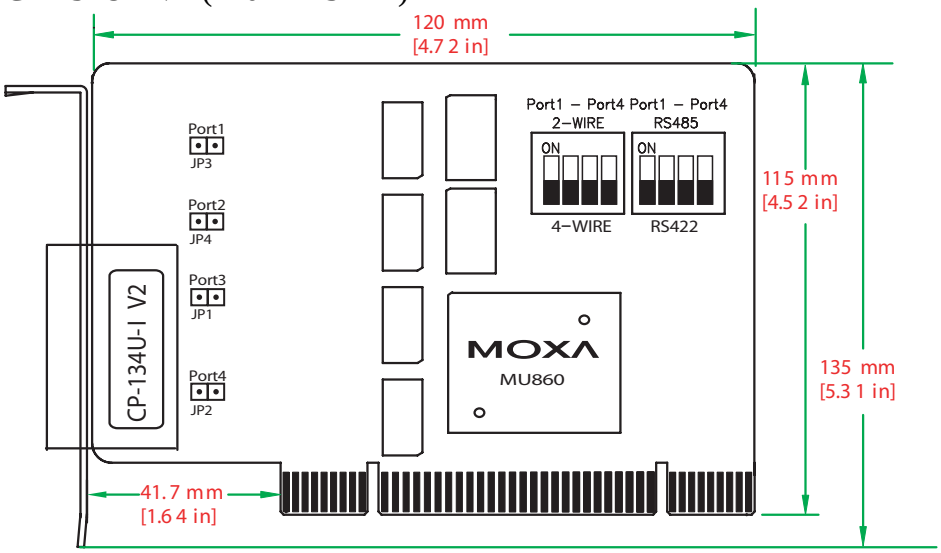
The following topics are covered in this chapter:

- **CP-134 Series Block Diagram**
- **Installing the CP-134U Series Board**

CP-134U Series Block Diagrams

CP-134U Series boards' IRQ number and I/O address are assigned automatically by the PCI BIOS. This means that the board MUST be plugged in first before installing the driver.

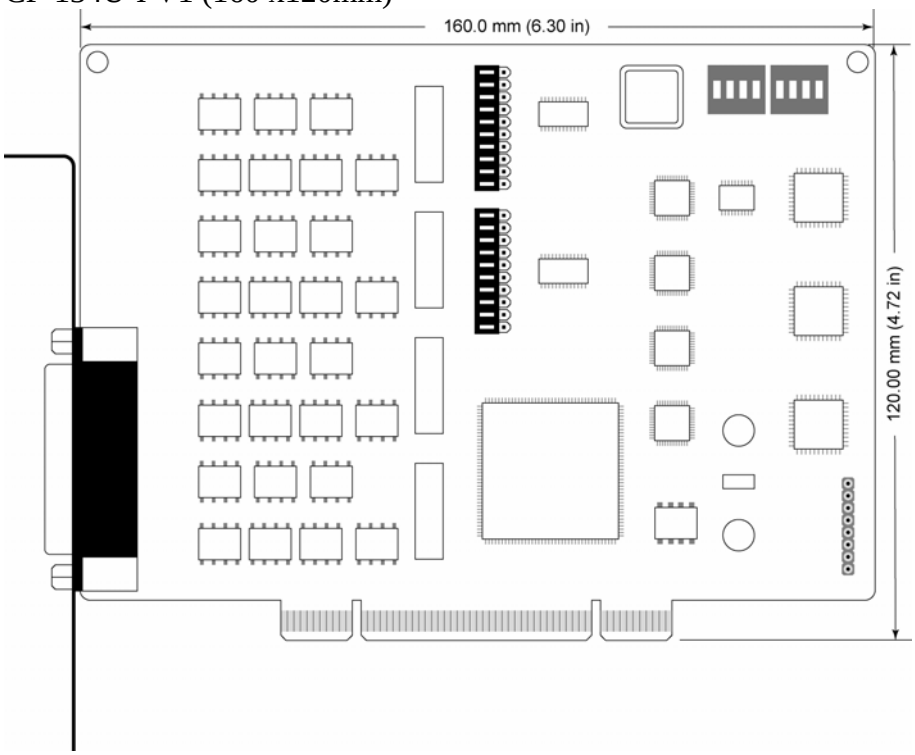
CP-134U-I V2 (120 x 115 mm)



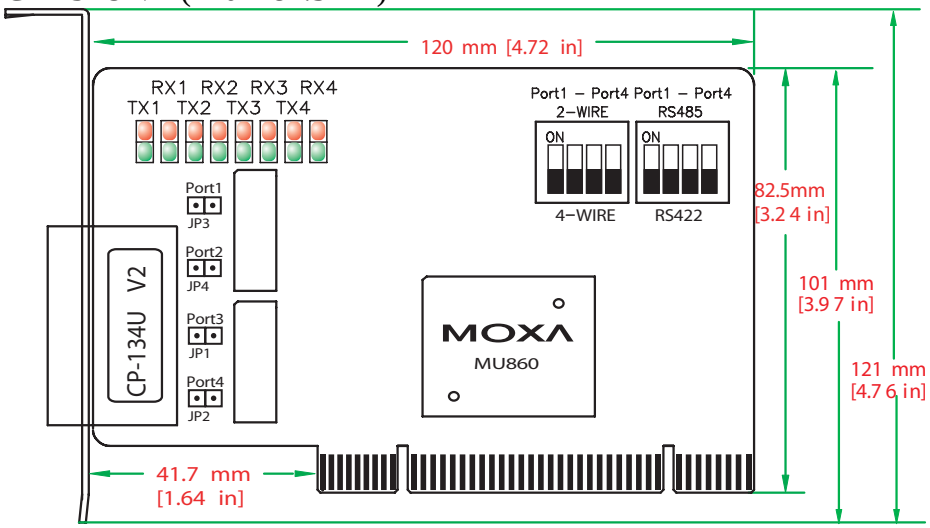
NOTE: Use JP1/2/3/4 to activate the Termination Resistors for ports 1/2/3/4.

Open Termination Resistor is NOT active
Short Termination Resistor is ACTIVE

CP-134U-I V1 (160 x120mm)



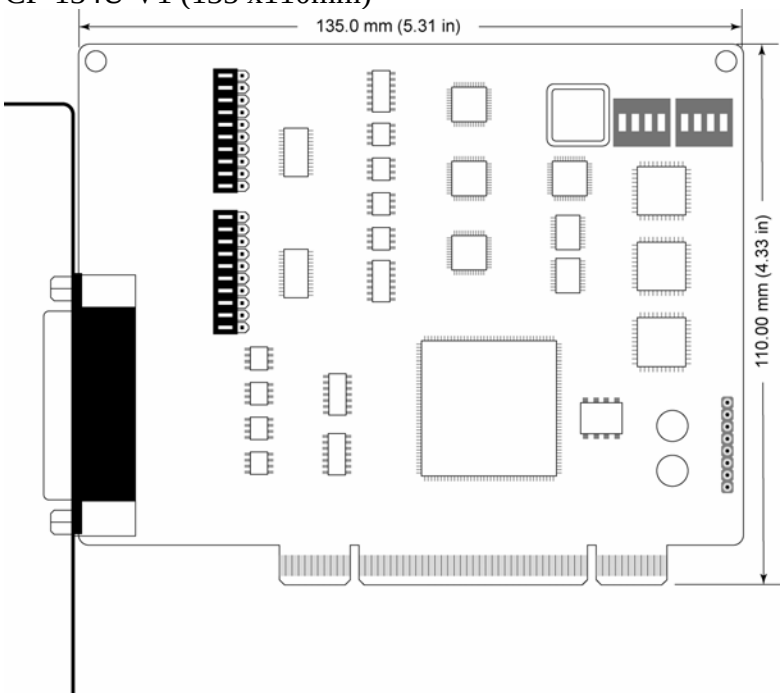
CP-134U V2 (120 x 82.5mm)



NOTE: Use JP1/2/3/4 to activate the Termination Resistors for ports 1/2/3/4.

Open Termination Resistor is NOT active
Short Termination Resistor is ACTIVE

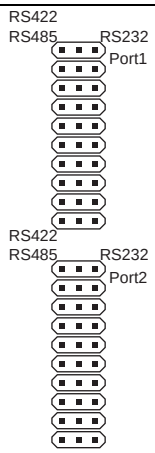
CP-134U V1 (135 x110mm)



The CP-134U Series has two 30-pin jumpers and two sets of four DIP Switches on the board that allow the user to set the serial interface for each of the board's four ports. Ports 1 and 2 can be set to RS-232, RS-422, RS-485 (2-wire), or RS-485 (4-wire). Ports 3 and 4 can be set to RS-422, RS-485 (2-wire), or RS-485 (4-wire). Refer to the following information to determine the proper settings for your board.

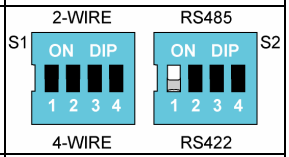
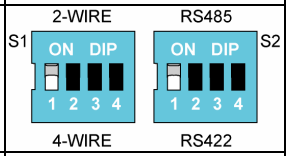
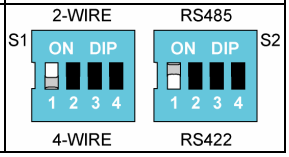
Jumper Settings

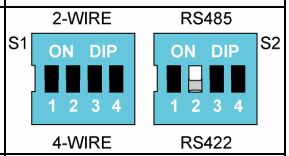
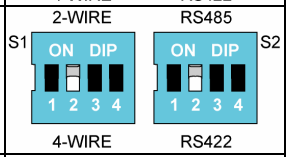
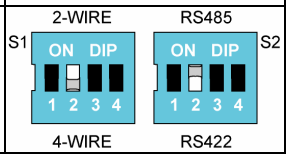
The two on-board 30-pin jumpers are used to select between the RS-232 and RS-422/485 serial interfaces. If you select RS-422/485, then you will also need to set the DIP Switches to select between RS-422, RS-485 (4-wire), and RS-485 (2-wire). Note that the two ports can be configured independently.

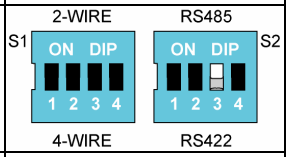
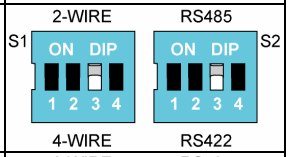
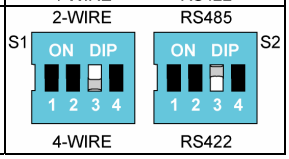
		
Jumper pins: Top for Port 1, Bottom for Port 2	**RS-422/485**: Plug in the jumper so that it covers the left two columns of pins to select the RS-422/485 option.	**RS-232**: Plug in the jumper so that it covers the right two columns of pins to select the RS-232 option.

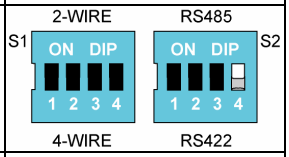
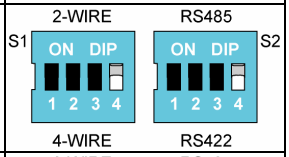
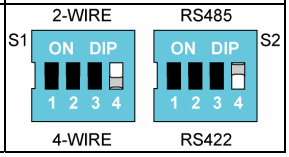
DIP Switch Settings

Refer to the figures on the following two pages to see how to select between RS-422, RS-485 (2-wire), and RS-485 (4-wire).

DIP Switch Settings	Port 1		
	S1-1	S2-1	
RS-232	—	—	
RS-422	—	OFF	
RS-485 (2-wire)	ON	ON	
RS-485 (4-wire)	OFF	ON	

DIP Switch Settings	Port 2		
	S1-2	S2-2	
RS-232	—	—	
RS-422	—	OFF	
RS-485 (2-wire)	ON	ON	
RS-485 (4-wire)	OFF	ON	

DIP Switch Settings	Port 3		
	S1-3	S2-3	
RS-422	—	OFF	
RS-485 (2-wire)	ON	ON	
RS-485 (4-wire)	OFF	ON	

DIP Switch Settings	Port 4		
	S1-4	S2-4	
RS-422	—	OFF	
RS-485 (2-wire)	ON	ON	
RS-485 (4-wire)	OFF	ON	

Installing the CP-134U Series Board

Step 1: Power off the PC.

WARNING

To avoid damaging your system and board, make sure your computer is turned off before installing any serial board.

Step 2: Remove the PC's cover.
Step 3: Remove the slot cover bracket if there is one.
Step 4: Plug the CP-134U Series control board firmly into an open 32-bit PCI slot, or an open 64-bit PCI slot.
Step 5: Fasten the holding screw to fix the control board in place.
Step 6: Replace the system cover.
Step 7: Power on the PC. The BIOS will automatically set the IRQ and I/O address.

NOTE Moxa PCI and Universal PCI boards must be assigned unique IRQ and I/O addresses. Both addresses are assigned automatically by the PCI BIOS.

Step 8: Proceed with the software installation discussed in the next chapter, "Software Installation."

3

Software Installation

In this chapter, the software driver installation, configuration, and driver update/removal procedures are described for various operating systems, including Windows NT, Windows 95/98, Windows 2000/XP/2003, DOS, FreeBSD, and Linux. Before proceeding with the software installation, make sure you have completed installing the hardware, as discussed in the previous chapter, "Hardware Installation."

Refer to the next chapter, "Serial Programming Tools," for information on developing your own serial programming applications.

Windows 2000/XP/2003, Windows NT, Windows 95/98, DOS, FreeBSD, and Linux drivers can be downloaded from the Moxa website.

The following topics are covered in this chapter:

- **Windows 2003**
- **Windows 2000/XP**
- **Windows 95/98**
- **Windows NT**
- **DOS**
- **Linux**

Windows 2003

This section describes how to install the Windows 2003 driver for PCI/Universal PCI boards. The driver conforms to the Win32 COMM API standard.

The Windows 2003 driver for MOXA's multiport serial boards supports the following products:

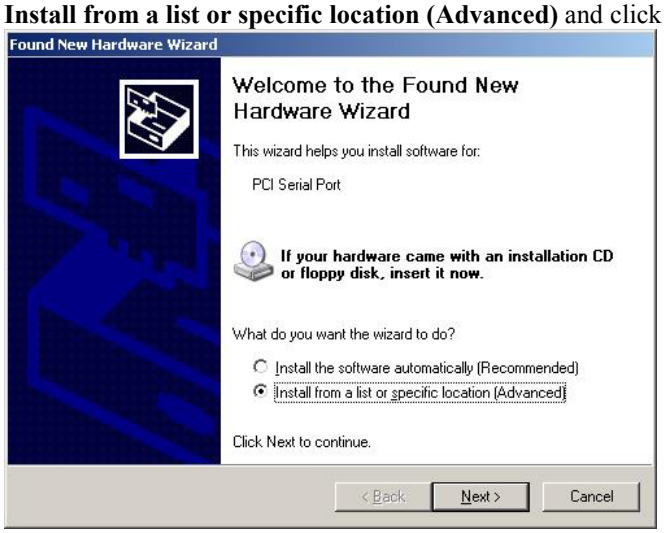
- **Universal PCI Boards:** CP-168U, CP-104UL, CP-104JU, CP-134U, CP-134U-I, CP-132UL, CP-132UL-I V2(CP-132U-I V1)
- **PCI Boards:** C168H/PCI, C104H/PCI, C104HS/PCI, CP-114, CP-114I, CP-114S, CP-114IS, CP-132, CP-132I, CP-132S, CP-132IS
- **ISA Boards:** C168H, C168HS, C168P, C104H, C104HS, C104P, CI-104J, CI-104JS, CI-134, CI-134I, CI-134IS, CI-132, CI-132I, CI-132IS
- **cPCI Boards:** CT-114I

The following steps use CP-168U to illustrate.

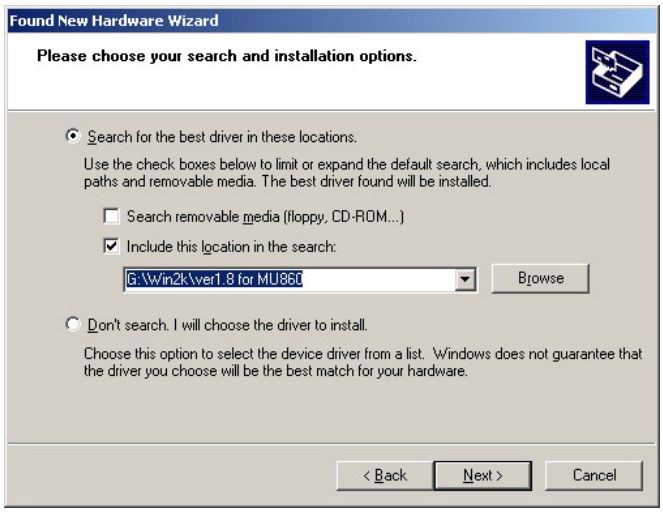
Installing the Driver

1. After installing the PCI/Universal PCI board and powering on your PC, Windows 2003 will automatically detect the PCI/Universal PCI board that was just added. The **Found New Hardware** window will open in the bottom right corner of the desktop.

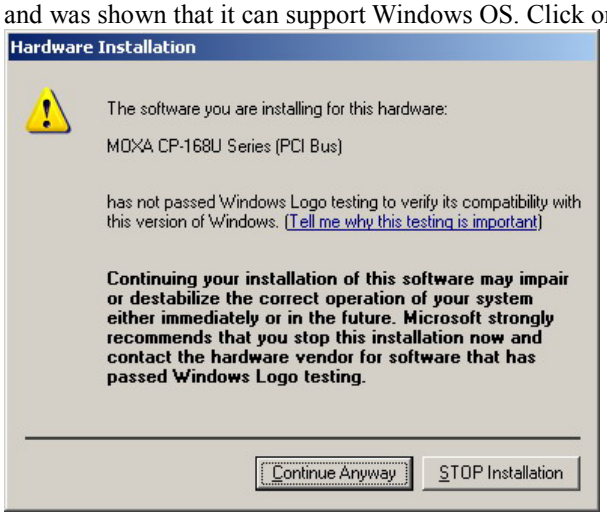
2. The **Welcome to the Found New Hardware Wizard** window will open automatically. **Select Install from a list or specific location (Advanced)** and click on **Next** to continue.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
PCI Serial Port
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

3. Select **Search for the best driver in these locations,** check **Include this location in the search**, and then click on Browse. You should be able to locate the **\Software\Win2K-XP-2003** folder on the software CD. Click on **Next** to continue.


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
G:\Win2k\ver1.8 for MU860
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

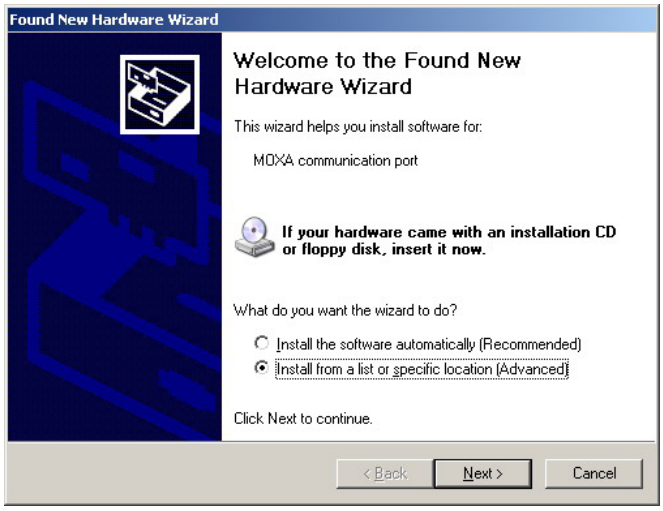
4. Wait while the installation wizard searches. The next window that opens cautions you that although this software hasn't passed Windows Logo testing, the driver has already been tested and was shown that it can support Windows OS. Click on **Continue Anyway** to proceed.


Hardware Installation
The software you are installing for this hardware:
MOXA CP-168U Series (PCI Bus)
has not passed Windows Logo testing to verify its compatibility with this version of Windows. (Tell me why this testing is important)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

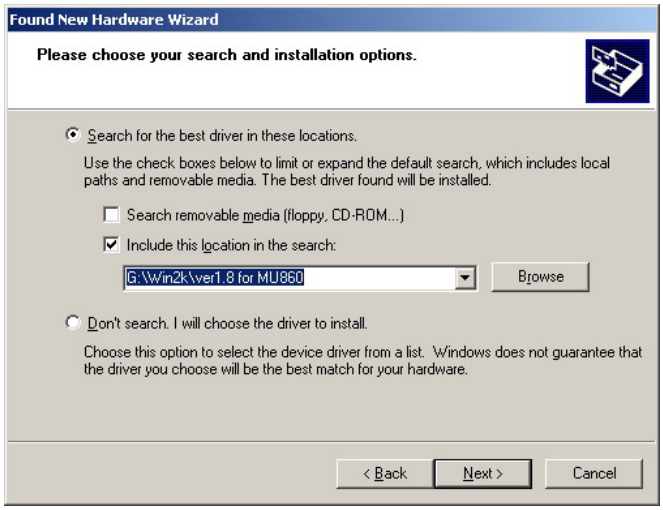
5. Wait while the driver software is installed. The next window shows the model number of the board, and indicates that Windows has completed the driver installation. Click on **Finish** to continue with the rest of the installation procedure.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
MOXA CP-168U Series (PCI Bus)
Click Finish to close the wizard.
< Back
Finish
Cancel

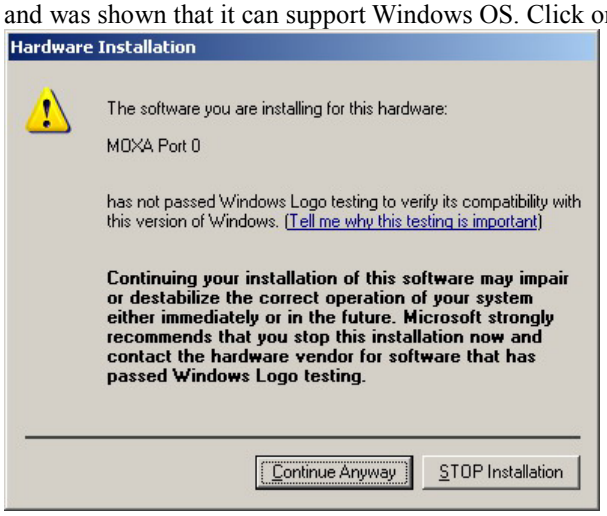
6. The **Found New Hardware Wizard** window will open to help you install the driver for **MOXA Port 0**. Select **Install from a list or specific location (Advanced)**. Click on **Next** to continue.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
MOXA communication port
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

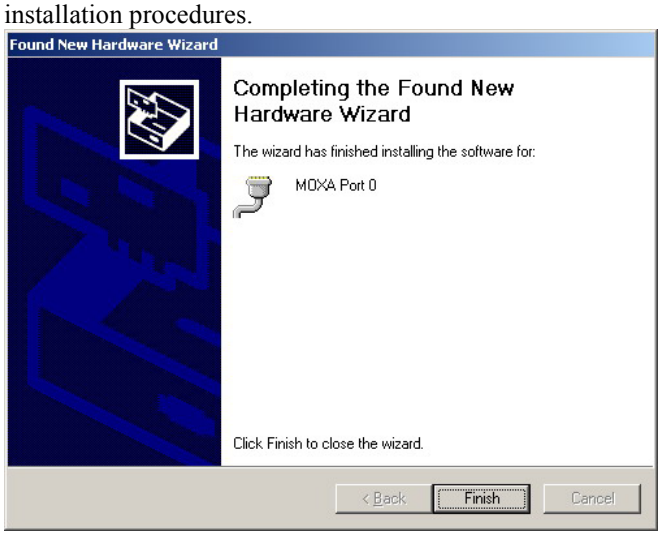
7. Select **Search for the best driver in these locations**, check **Include this location in the search**, and then click on **Browse**. You should be able to locate the **\Software\Win2K-XP-2003** folder on the software CD. Click on **Next** to continue.


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
G:\Win2k\ver1.8 for MU860
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

8. Wait while the installation wizard searches. The next window that opens cautions you that although this software hasn't passed Windows Logo testing, this driver has already been tested and was shown that it can support Windows OS. Click on **Continue Anyway** to proceed.


Hardware Installation
The software you are installing for this hardware:
MOXA Port 0
has not passed Windows Logo testing to verify its compatibility with this version of Windows. (Tell me why this testing is important)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

9. Wait while the port driver is being installed. Click on **Finish** to continue with the rest of the installation procedures.



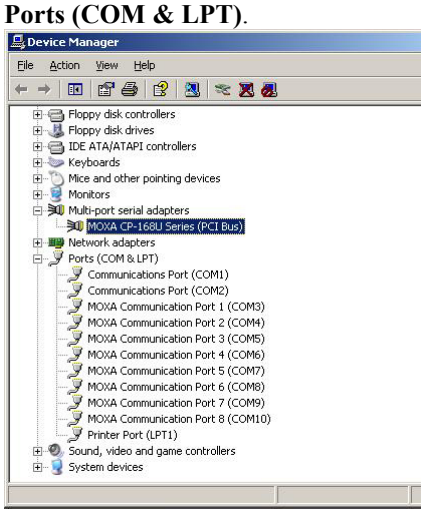
10. Repeat steps 6 to 9, until the port driver installation for every port is completed.

How to Check the Installation

There are three ways to check the installation of CP-168U Series boards.

Using Device Manager

1. Use your mouse to position the cursor over your desktop's **My computer** icon, click the right mouse button, and then select **Properties**.
2. When the **System Properties** window opens, click on the **Hardware** tab, and then click on **Device Manager**.
3. When the **Device Manager** window opens, you will be able to see the model of **MOXA CP-168U Series** under **Multi-port serial adapters**, and **MOXA communication ports under Ports (COM & LPT)**.



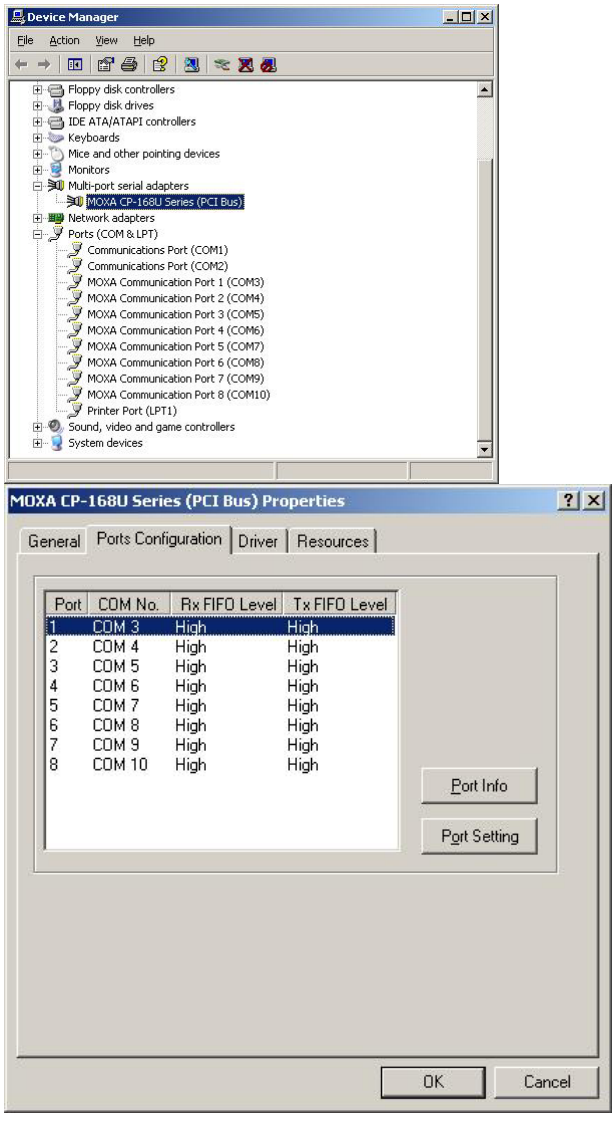
4. If there are any special marks, such as a question mark or an exclamation mark in front of the icons, the installation of the board or the ports was not successful. Examine the **Event Log** for details.

Port Configuration

After the driver is installed, the MOXA CP-168U Installation window will be displayed, and the system will map the ports automatically.

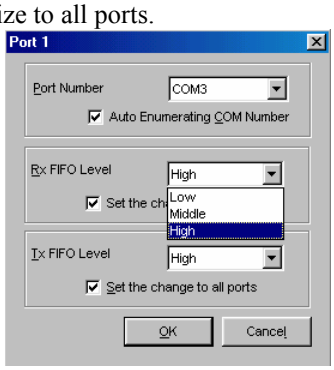
If one MOXA CP-168U board was installed previously, and another MOXA CP-168U board is added, the system will prompt you to take care of port configuration, which is discussed in this section.

Click on a specific port from the **CP-168U Series Installation** window, and then click on **Port Setting** to open the **Port X** window.



Select a COM number for the port from the **Port Number** pull-down list.
Check the **Auto Enumerating COM Number** check-box to have subsequent ports mapped to continuous COM numbers. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.
Select an Rx FIFO Trigger from the Rx FIFO Level pull-down list. Rx FIFO trigger levels from High to Low are available, with a default value is High Level (120 bytes). Check **Set the change to all ports** check-box to apply the just defined Rx FIFO Trigger to all ports.

Select a Tx FIFO Size from the Tx FIFO Level pull-down list. Tx FIFO Levels from High to Low are available, with the default set to High (128 bytes). Check **Set the change to all ports** check-box to apply the just defined Tx FIFO Size to all ports.



	CP-134U V2/CP-134U-I V2		CP-134U/CP-134U-I	
	Tx FIFO	Rx FIFO	Tx FIFO	Rx FIFO
High	128	120	64	56
Middle	64	60	32	28
Low	1	1	1	1

Unit: Bytes

Click on **OK** in the **Port X** window to confirm the port settings, and then click on **OK** in the **Property** window to complete the port settings.

Using PComm

The PComm Diagnostic program is a very useful tool for checking the status of MOXA's multiport boards. It can be used for internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, etc., and can be used to verify that MOXA's boards and ports are working properly.

To start the program, click on **Start → Programs → PComm Lite 2000 →PComm Diagnostic**.

NOTE: If you do not have the PComm software, you can download the free version from Moxa's website at www.moxa.com.

Using Event Log

To use Event Log to check MOXA boards, click on **Start → Settings → Control Panel → Administrative Tools → Event Viewer** to enter the **Event Viewer** program. You can find the latest information relevant to MOXA's drivers under **System** category.

Windows 2000/XP

Windows 2000/XP supports up to 256 serial ports, from COM1 to COM256. To fully utilize Windows 2000/XP's multi-process and multi-thread advanced features, pure 32-bit Windows 2000/XP device drivers were developed for MOXA multiport boards. The drivers conform to the Win32 COMM API standard.

The Windows 2000/XP driver for MOXA's multiport serial boards supports the following products:

- **Universal PCI Boards:** CP-168U, CP-104UL, CP-104JU, CP-134U, CP-134U-I, CP-132UL, CP-132UL-I V2(CP-132U-I V1)
- **PCI Boards:** C168H/PCI, C104H/PCI, C104HS/PCI, CP-114, CP-114I, CP-114S, CP-114IS, CP-132, CP-132I, CP-132S, CP-132IS
- **ISA Boards:** C168H, C168HS, C168P, C104H, C104HS, C104P, CI-104J, CI-104JS, CI-134, CI-134I, CI-134IS, CI-132, CI-132I, CI-132IS
- **cPCI Boards:** CT-114I

The following steps use CP-168U to illustrate.

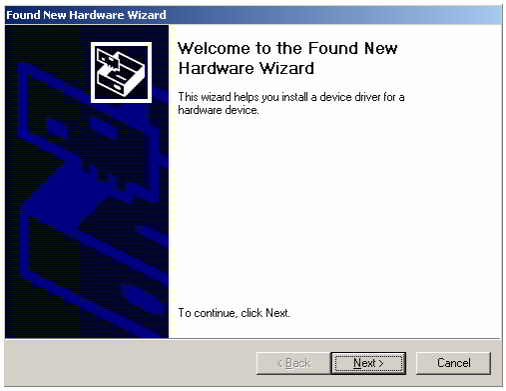
Installing the Driver

The following procedure describes how to install the CP-168U driver for the first time under Windows 2000 and Windows XP. First make sure the board or boards have already been plugged into the system's PCI or PCI-X slot(s).

Windows 2000

1. Windows 2000 can auto-detect new devices, and activate the Found New Hardware function to install a device driver for Plug and Play devices.

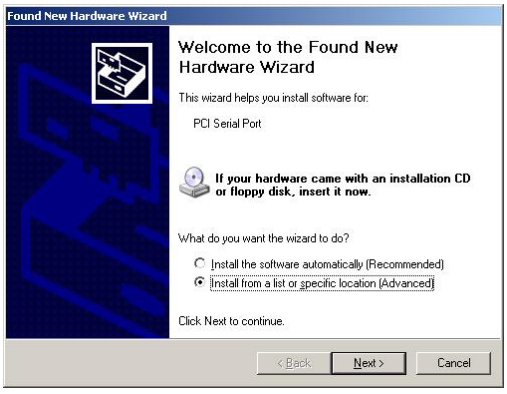
2. Click on **Next** to continue.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

Windows XP

1. Windows XP can auto-detect new devices, and activate the Found New Hardware function to install a device driver for Plug and Play devices.

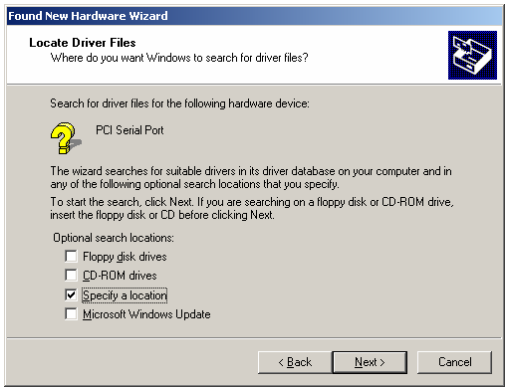
2. Select **Install from a list or specific location**, click on **Next** to continue.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
PCI Serial Port
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

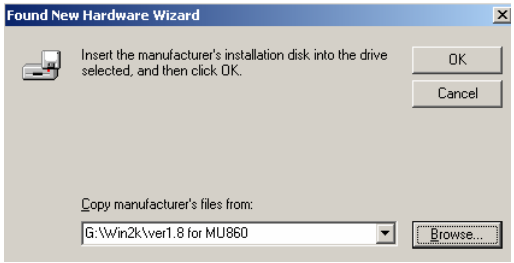
3. Select **Search for a suitable driver…** and then click on **Next** to continue.

Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
PCI Serial Port
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

4. Select **Specify a location** and then click on **Next** to continue.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
PCI Serial Port
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

5. Insert the Moxa Driver CD into the CD-ROM drive, and then specify the location of the file as **Software\Win2K-XP-2003** as shown below (change the drive letter if needed). Click on **OK** to continue.



3. Checkmark **Include this location in the search** checkbox, and then click on **Browse**. You should be able to locate the **Software\Win2K-XP-2003** folder on the software CD. Click on **Next** to continue.

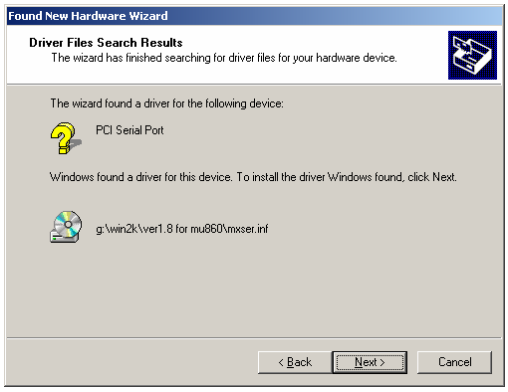
Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
H:\Win2k\ver1.8 for MU860
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

4. Wait while the driver software is installed.

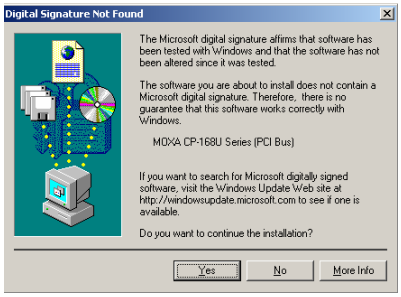
5. Wait while the installation wizard searches. The next window that opens cautions you that although this software hasn't passed Windows Logo testing, the driver has already been tested and was shown that it can support Windows OS. Click on **Continue Anyway** to proceed.

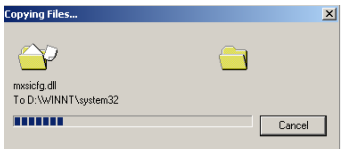
Hardware Installation
The software you are installing for this hardware:
MOXA CP-168U Series (PCI Bus)
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

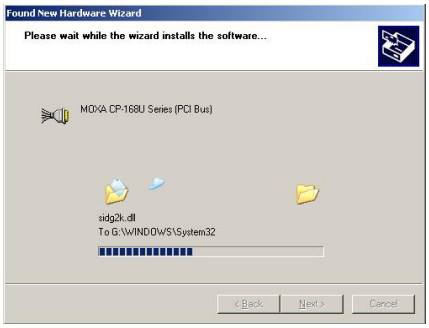
6. Click on **Next** to copy the driver files to your system.


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
PCI Serial Port
Windows found a driver for this device. To install the driver Windows found, click Next.
g:\win2k\ver1.8 for mu860\mxser.inf
< Back
Next >
Cancel

7. Wait while the installation wizard searches. The next window that opens cautions you that although this software hasn't passed Windows Logo testing, this driver has already been tested and was shown that it can support Windows OS. Click on **Continue Anyway** to proceed.


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
MOXA CP-168U Series (PCI Bus)
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info





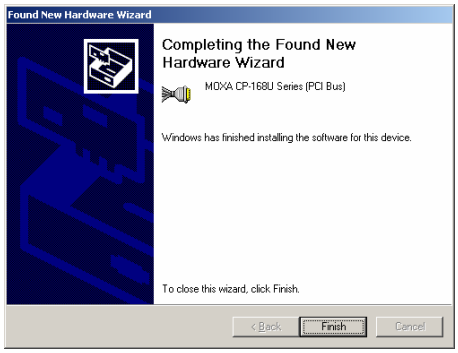
6. The next window shows the model number of the board, and indicates that Windows has completed the driver installation. Click on **Finish** to continue with the rest of the installation procedure.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
MOXA CP-168U Series (PCI Bus)
Click Finish to close the wizard.
< Back
Finish
Cancel

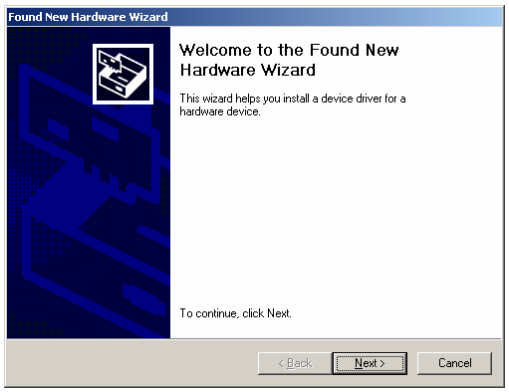
7. The next **Welcome to the Found New Hardware Wizard** window that opens starts the port installation procedure. Select **Install the software from a specific location** and then click on **Next** to continue.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
MOXA communication port
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

8. The next window shows the model number of the board, and indicates that Windows has completed the driver installation. Click on **Finish** to continue with the rest of the installation procedure.


Found New Hardware Wizard
Completing the Found New Hardware Wizard
MOXA CP-168U Series (PCI Bus)
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

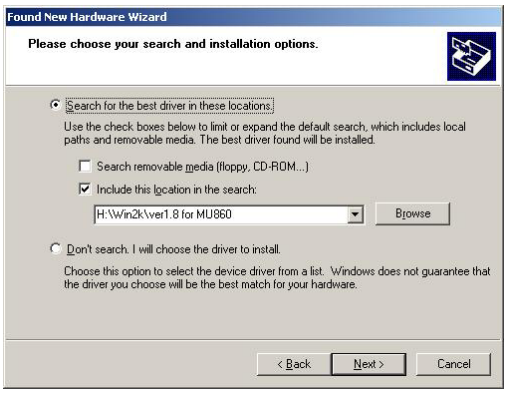
9. The next **Welcome to the Found New Hardware Wizard** window to open starts the port installation stage. Click on **Next** to continue.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

10. Select **Search for a suitable driver for my device [recommended]**, and then click on **Next** to continue.

Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
MOXA communication port
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

8. Input the location of the driver in the text input box, or use the **Browse** button to locate the appropriate folder.

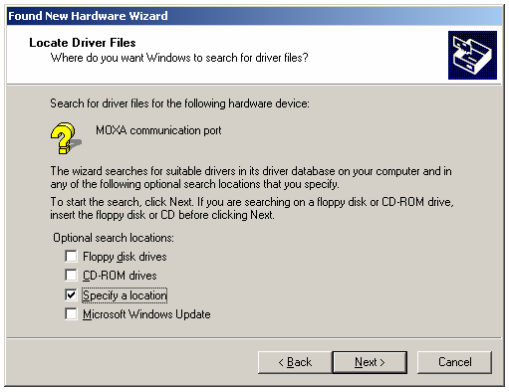

Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
H:\Win2k\ver1.8 for MU860
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

9. Wait while the installation wizard searches. The next window that opens cautions you that although this software hasn't passed Windows Logo testing, this driver has already been tested and been shown that it can support Windows OS. Click on **Continue Anyway** to proceed.

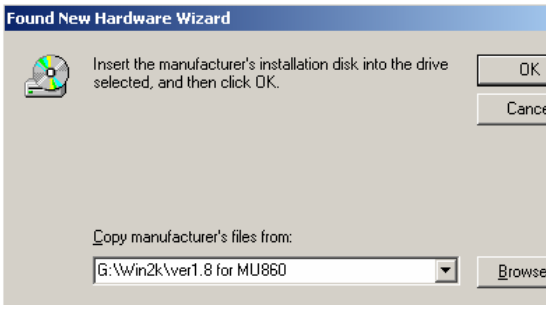
Hardware Installation
The software you are installing for this hardware:
MOXA Port 0
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

10. Wait while the installation wizard searches.

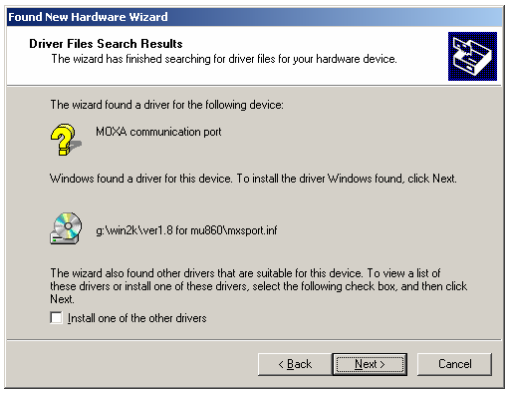
11. Select **Specify a location** and then click on **Next** to continue.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
MOXA communication port
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

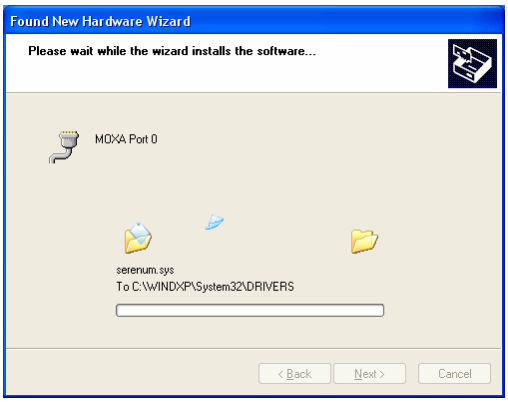
12. Insert the Moxa Driver CD into the CD-ROM drive, and then specify the location of the file as **Software\Win2K-XP-2003** as shown below (change the drive letter, if needed). Click on **OK** to continue.



13. Click on **Next** to continue with the installation.

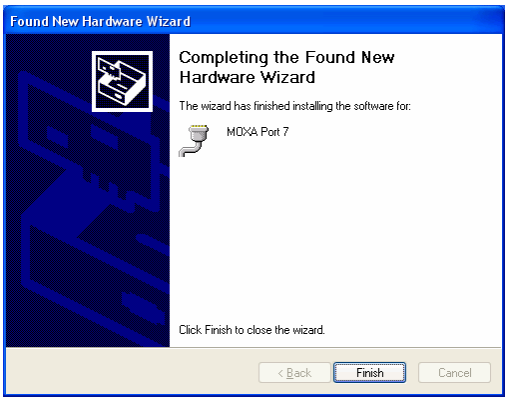

Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
MOXA communication port
Windows found a driver for this device. To install the driver Windows found, click Next.
g:\win2k\ver1.8 for mu860\mxsport.inf
The wizard also found other drivers that are suitable for this device. To view a list of these drivers or install one of these drivers, select the following check box, and then click Next.
Install one of the other drivers
< Back
Next >
Cancel

11. Wait while the wizard installs the software.

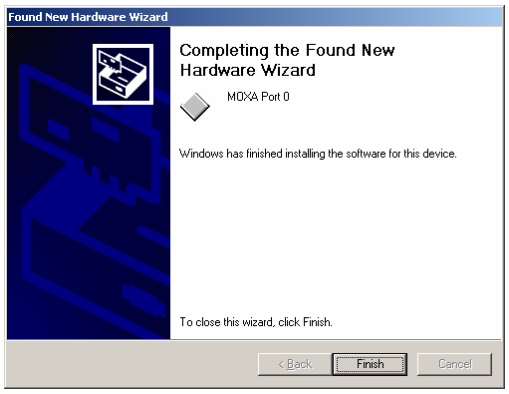


12. After all files have been copied to the system, the **Completing the Found New Hardware Wizard** window will open to indicate that it has finished installing "Port 0." Click on **Finish** to install the board's second port.

13. Repeat the above procedure (Steps 7 to 12) for the rest of the board's ports. The last window to open completes installation of Port 7.



14. After all files have been copied to the system, the **Completing the Found New Hardware Wizard** window will open to indicate that it has finished installing "Port 0." Click on **Finish** to install the board's second port.


Found New Hardware Wizard
Completing the Found New Hardware Wizard
MOXA Port 0
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

15. Repeat the above procedure (Steps 9 to 14) for the rest of the board's ports. The last window to open completes installation of Port 7.

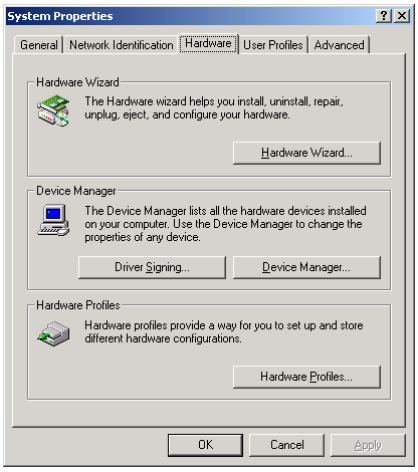
How to Check the Installation

There are three ways to check the installation of the CP-168U Series board.

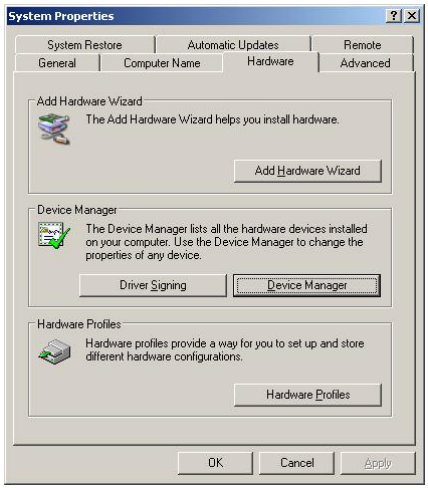
Device Manager

You can check the installation of the board by selecting **Start → Settings → Control Panel → System**, select the **Hardware** tab, and then click on the **Device Manager** button.

Windows 2000


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

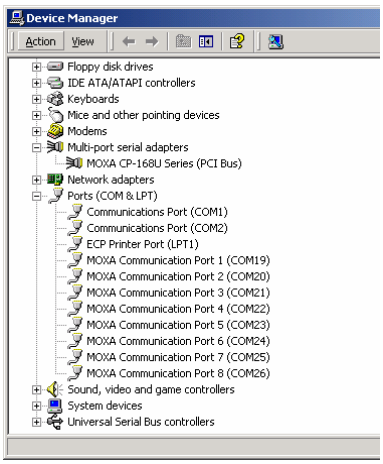
Windows XP



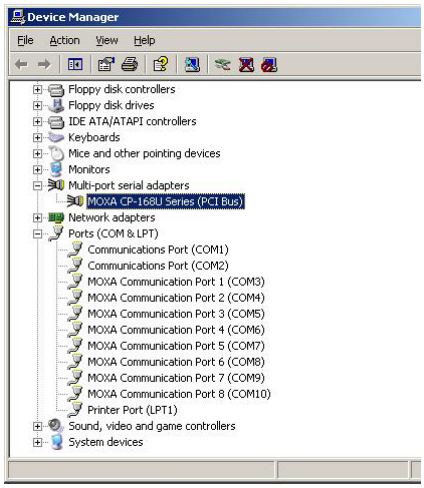
If the driver installation was successful, you will be able to see the model number of the CP-168U board listed under **Multi-port serial adapters**.

You may also expand the **Ports (COM & LPT)** item to check the status of the COM ports. If you see a question mark on top of the icon, then the installation might have a problem. Check the Event Log to determine what kind of problem exists.

Windows 2000



Windows XP

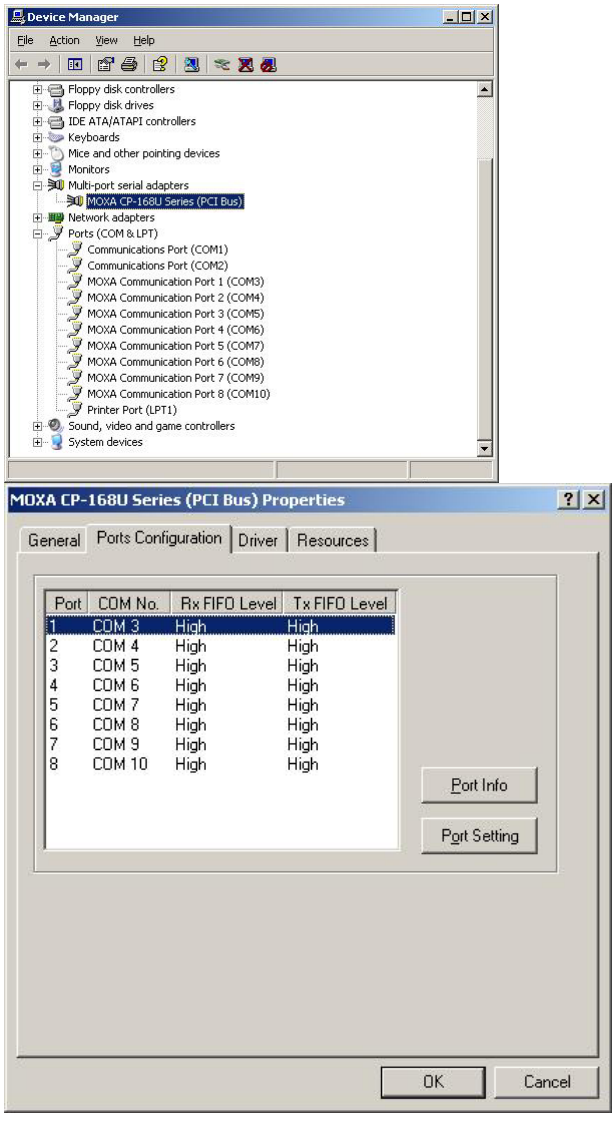


Port Configuration

After the driver is installed, the MOXA CP-168U Installation window will be displayed, and the system will map the ports automatically.

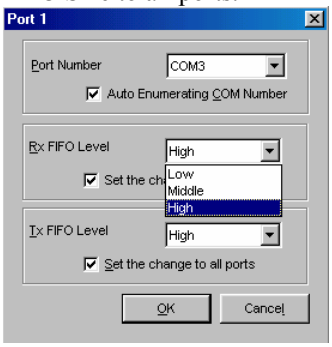
If one MOXA CP-168U board was installed previously, and another MOXA CP-168U board is added, the system will prompt you to take care of port configuration, which is discussed in this section.

Click on a specific port from the **CP-168U Series Installation** window, and then click on **Port Setting** to open the **Port X** window.



Select a COM number for the port from the **Port Number** pull-down list.
Check the **Auto Enumerating COM Number** check-box to force ports to map sequentially to COM numbers. For example, if COM 3 is assigned to Port 1, then COM 4 will be assigned automatically to Port 2.
Select an Rx FIFO Trigger from the Rx FIFO Level pull-down list. Rx FIFO trigger levels from High to Low are available, with the default set to High (120 bytes). Check the **Set the change to all ports** check-box to apply the just defined Rx FIFO Trigger to all ports.
Select a Tx FIFO Size from the Tx FIFO Level pull-down list. Tx FIFO Levels from High to Low are available,

with the default set to High (128 bytes). Check the **Set the change to all ports** check-box to apply the just defined Tx FIFO Size to all ports.



	CP-134U V2/CP-134U-I V2		CP-134U/CP-134U-I	
	Tx FIFO	Rx FIFO	Tx FIFO	Rx FIFO
High	128	120	64	56
Middle	64	60	32	28
Low	1	1	1	1

Unit: Bytes

Click on **OK** in the Port X window to confirm the port settings, and then click on **OK** in the Property window to complete the port settings.

MOXA PComm Utility

This utility, which comes with MOXA PComm Lite, provides a convenient way to diagnose problems with Moxa boards, and provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, etc. The program can be used to verify that the hardware and software related to Moxa boards and ports are installed and running correctly.

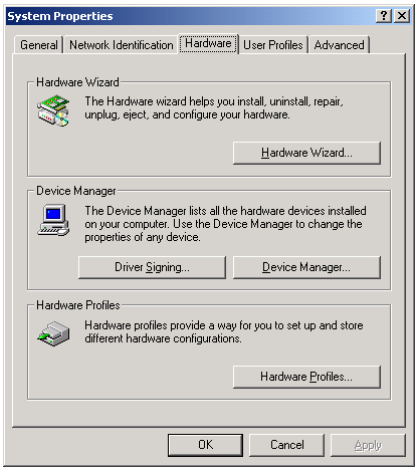
Event Log

To check the Event Log for MOXA boards, click **Start → Settings → Control Panel → Administrative Tools → Event Viewer**, to enter the Event Viewer program. You may find the latest information relevant to the Moxa driver in the system category.

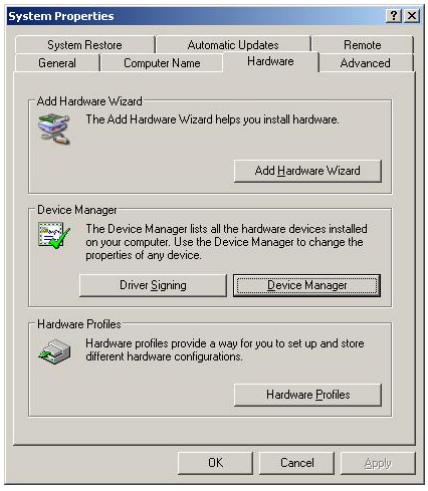
Removing the Driver

You can uninstall the board by first selecting **Start → Settings → Control Panel → System**.

Windows 2000

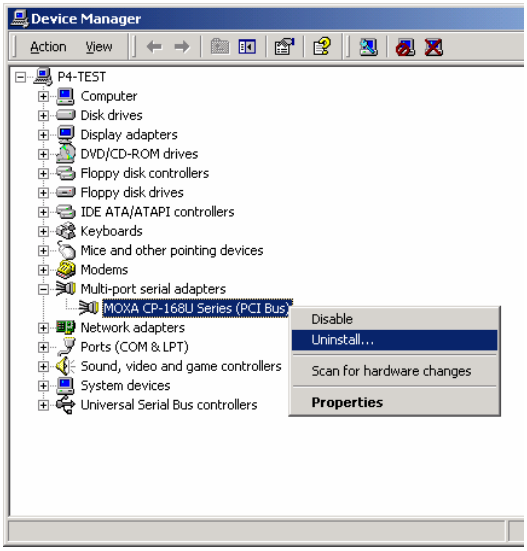

System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

Windows XP

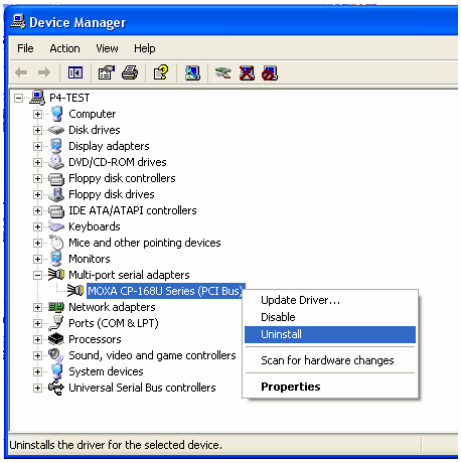


Select the Hardware tab, and then click on Device Manager. Use the mouse to place the cursor over the CP-168U Series board under Multiport serial adapters, and then click the right mouse button. Select the **Uninstall**… option.

Windows 2000

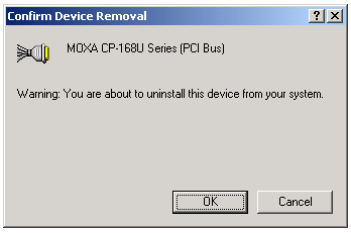


Windows XP



Click on **OK** to proceed with the un-installation of the board.

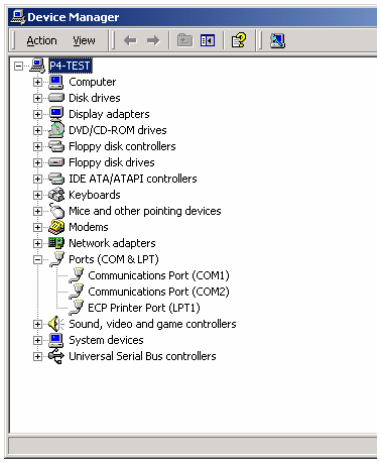
Windows 2000

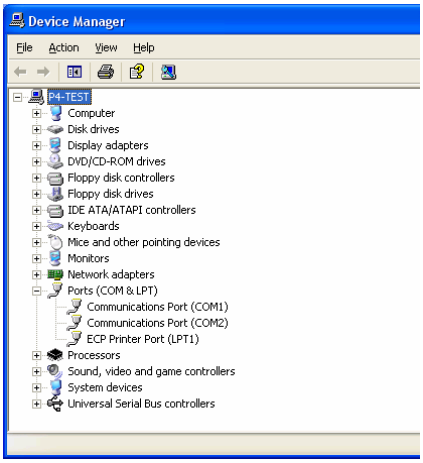

Confirm Device Removal
MOXA CP-168U Series (PCI Bus)
Warning: You are about to uninstall this device from your system.
OK
Cancel

Windows XP

Confirm Device Removal
MOXA CP-168U Series (PCI Bus)
Warning: You are about to uninstall this device from your system.
OK
Cancel

The **Device Manager** window will automatically refresh to show that the driver and ports for the CP-168U Series board have been removed.





Windows 95/98

The Windows 95/98 driver supports up to 128 serial ports, from COM1 to COM128. To fully utilize the advanced multi-process and multi-thread features of Windows 95/98, pure 32-bit Windows 95/98 virtual device port drivers (VxD) compliant with communication drivers (VCOMM) have been developed for the CP-168U and other MOXA multiport boards. The drivers conform to the Win32 COMM API standard.

The Windows 95/98 driver for MOXA's multiport serial boards supports the following products:

- **Universal PCI Boards:** CP-168U, CP-104UL, CP-104JU, CP-134U, CP-134U-I, CP-132UL, CP-132UL-I V2(CP-132U-I V1)
- **PCI Boards:** C168H/PCI, C104H/PCI, C104HS/PCI, CP-114, CP-114I, CP-114S, CP-114IS, CP-132, CP-132I, CP-132S, CP-132IS
- **ISA Boards:** C168H, C168HS, C168P, C104H, C104HS, C104P, CI-104J, CI-104JS, CI-134, CI-134I, CI-134IS, CI-132, CI-132I, CI-132IS
- **cPCI Boards:** CT-114I

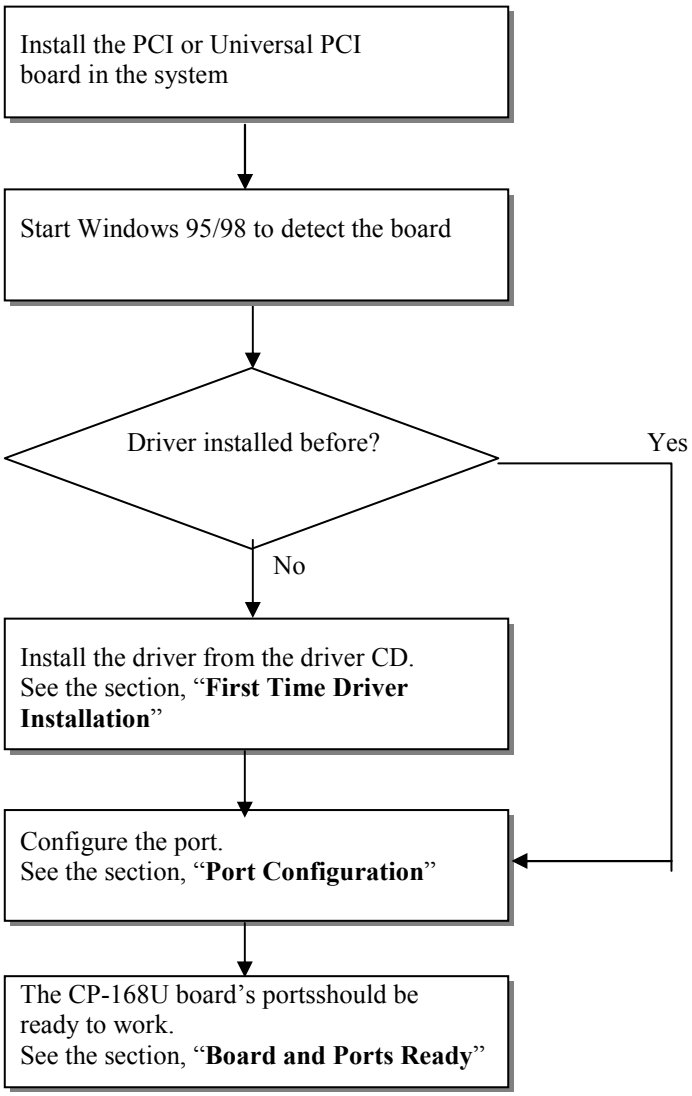
The following steps use CP-168U to illustrate.

Installing the Driver

The plug-n-play capability of Windows 95/98 allows you to plug the CP-168U board into an available PCI slot, and then get to work right away with very little installation effort. Windows 95/98 automatically detects the presence of the new board, and prompts you to install the driver. You just need to have the driver CD available to complete the installation process.

A maximum of 4 CP-168U boards can be installed in one system, provided sufficient I/O address and IRQ number resources are available.

The following flow chart illustrates the driver installation stages of CP-168U boards.


Install the PCI or Universal PCI board in the system
Start Windows 95/98 to detect the board
Driver installed before?
Yes
No
Install the driver from the driver CD. See the section, "First Time Driver Installation"
Configure the port. See the section, "Port Configuration"
The CP-168U board's portsshould be ready to work. See the section, "Board and Ports Ready"

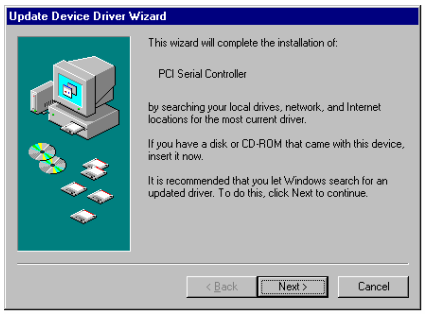
First Time Driver Installation

This stage gives the steps for installing the CP-168U board driver for the first time. To account for the slight difference between installing under Windows 95 and Windows 98, a separate column is used for each of the two operating systems. Follow the steps in the left column for Windows 95, and in the right column for Windows 98.

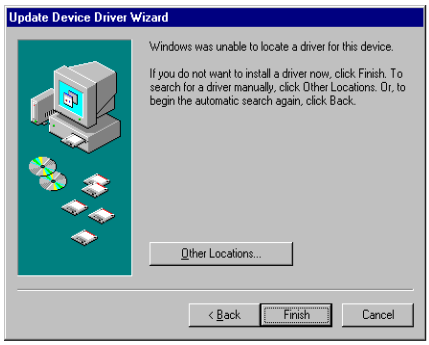
If a CP-168U board has already been installed, and another CP-168U board is plugged in, the system will prompt you to skip this stage, and go directly to Port Configuration, which is discussed in the next section.

Upon detecting the first new CP-168U Series board, Windows 95/98 will automatically display a **New hardware found** message box, and then display the following windows. Click on **Next** to proceed.

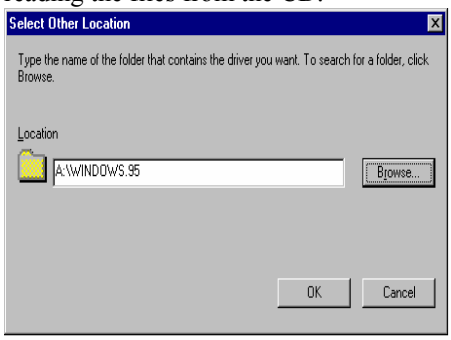
Windows 95


Update Device Driver Wizard
This wizard will complete the installation of:
PCI Serial Controller
by searching your local drives, network, and Internet locations for the most current driver.
If you have a disk or CD-ROM that came with this device, insert it now.
It is recommended that you let Windows search for an updated driver. To do this, click Next to continue.
< Back
Next >
Cancel

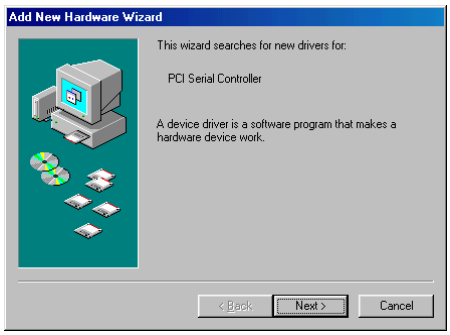
2. Click on Other Locations.


Update Device Driver Wizard
Windows was unable to locate a driver for this device.
If you do not want to install a driver now, click Finish. To search for a driver manually, click Other Locations. Or, to begin the automatic search again, click Back.
Other Locations...
< Back
Finish
Cancel

3. Type **\Software\Win9x\Windows** in the **Location** input box, and then click **OK** in the **Select Other Location** window. The system will start reading the files from the CD.



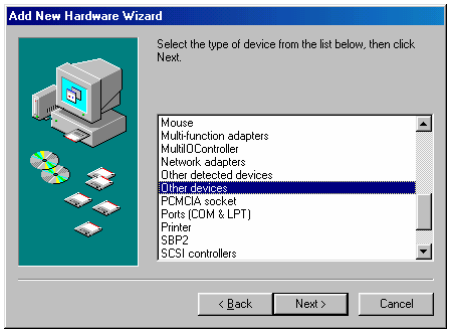
Windows 98


Add New Hardware Wizard
This wizard searches for new drivers for:
PCI Serial Controller
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

2. Select **Display a list...** and then click on **Next**.

Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

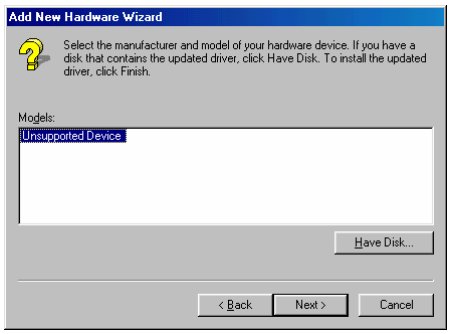
3. Select **Other Devices** and then click on **Next**.



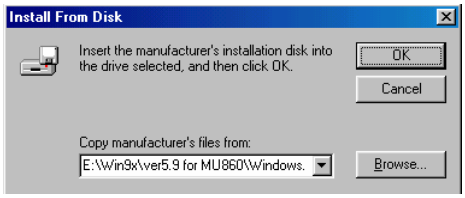
4. Click on **Finish**.

Add New Hardware Wizard
Windows driver file search for the device:
CP-168U Series
If you want to use this driver, click Finish. If this is not the correct driver and you want to search for a different driver manually, click Other Locations.
Location of Driver
Windows.95
Other Locations...
< Back
Finish
Cancel

4. Click on **Have Disk**.


Add New Hardware Wizard
Select the manufacturer and model of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.
Models:
Unsupported Device
Have Disk...
< Back
Next >
Cancel

5. Type \Software\Win9x\Windows and then click on **OK**. The system will start reading the files from the CD.



Board and Port Ready

After finishing this stage, the driver installation will be complete.

Windows 95

After configuring the ports, you can start using the COM ports of the CP-168U board without restarting Windows 95.

Windows 98

After configuring the ports, click on **Finish**. The COM ports of the CP-168U board can be used without restarting Windows 98.

Add New Hardware Wizard
CP-168U Series
Windows has finished installing the software you selected that your new hardware device requires.
< Back
Finish
Cancel

NOTE If an error message similar to "CP-168U board(BusNo=x, DevNo=x, Port1=COMx) interrupt number is invalid!" pops up, refer to the "Troubleshooting" chapter for solutions.

If you want to add more boards after installing the driver, simply plug the additional CP-168U board into an empty PCI slot, and Windows 95/98 will automatically detect the additional board. Skip to Port Configuration to take care of port settings.

This completes the installation of the CP-168U board driver, including board and port configuration. If you need to modify configuration of the board and ports, refer to the next section,

"Configuring the Board and Ports," for configuration details.

Once the board and the driver are installed and the driver restarts successfully, you can start developing applications with PComm library (see "Serial Programming Tools") or the Microsoft Win32 API. You can also use applications such as Terminal Emulator (see "Serial Programming Tools"), a PComm utility, or HyperTerminal, to transmit/receive data, as well as Remote Access Service to provide dial-up networking capabilities.

Configuring the Board and Ports

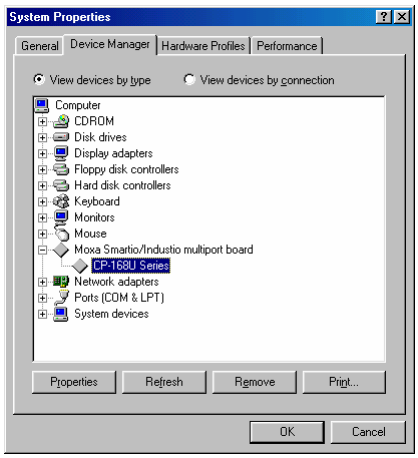
Follow the procedures given below to re-configure the COM number of ports for boards already installed under Windows 95/98.

In addition to following the procedures listed below, you may also click on **[Start] → [Programs] → [MOXA Utility] → [MOXA Smartio/Industio Configuration Panel] → [Property] → [Port Setting]**.

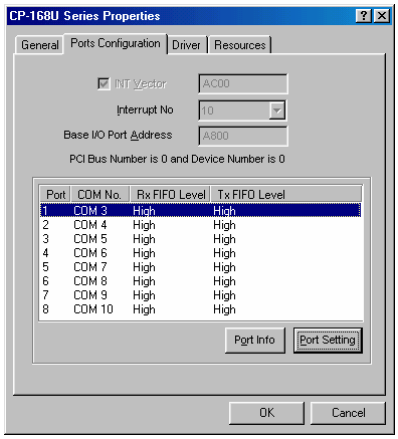
Since this is a PCI or Universal PCI board, once a new board is added or an existing board is removed, the board's configuration will be automatically added or removed by the operating system when you restart the PC.

Open the [**Control Panel**], click on the [**System**] icon, select the [**Device Manager**] tab, and then click on the plus sign to the left of **Moxa Smartio/Industio multiport board**.

Click on one of the CP-168U boards, and then click on **Properties**.



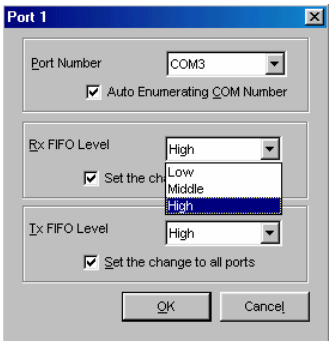
Select the **Ports Configuration** tab, click on a specific port, and then click on the **Port Setting** button.



Check the **Auto Enumerating COM Name** check-box to assign continuous COM numbers for subsequent ports. For example, if COM3 is assigned to Port 1, then COM4 will be automatically assigned to Port 2.

Select an Rx FIFO Trigger from the Rx FIFO Level pull-down list. Rx FIFO trigger levels from High to Low are available, with the default set to High (120 bytes). Check **Set the change to all ports** check-box to apply the just defined Rx FIFO Trigger to all ports.

Select a Tx FIFO Size from the Tx FIFO Level pull-down list. Tx FIFO Levels from High to Low are available, with the default set to High (128 bytes). Check **Set the change to all ports** check-box to apply the just defined Tx FIFO Size to all ports.



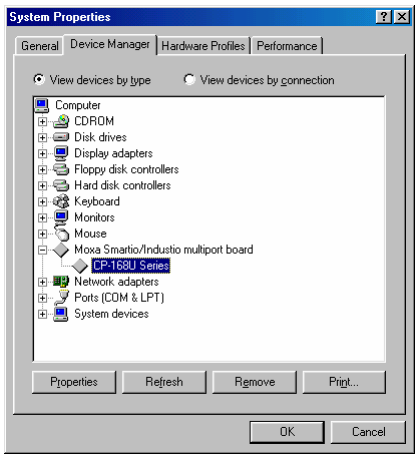
	CP-134U V2/CP-134U-I V2		CP-134U/CP-134U-I	
	Tx FIFO	Rx FIFO	Tx FIFO	Rx FIFO
High	128	120	64	56
Middle	64	60	32	28
Low	1	1	1	1

Unit: Bytes

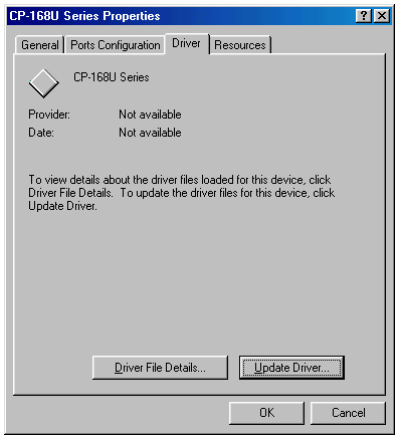
To complete the update, click **OK** in the **Port X** window, click **OK** in the **CP-168U board Properties** window, and then click **[OK]** on the **Device Manager** tab. Restart the system to activate the latest configuration.

Updating the Driver

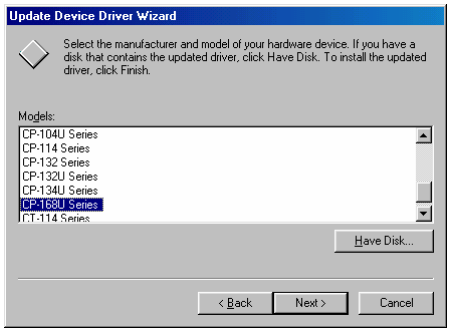
This section describes how to update the Windows 95/98 driver. Open **Control Panel**, click on the **System** icon, and select the **Device Manager** tab. Click on the **MOXA CP-168U board** and then click on **Properties**.



Select the **Driver** tab, and the click on **Update Driver...**.



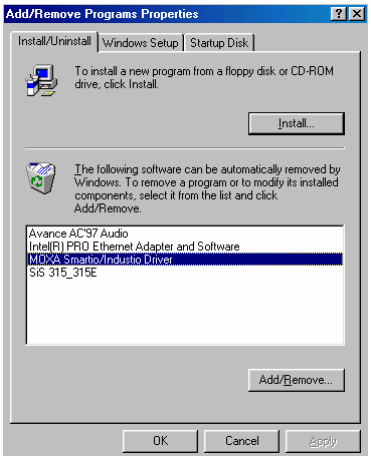
Click on **Have Disk...** and then type the path of the new driver.


Update Device Driver Wizard
Select the manufacturer and model of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.
Models:
CP-104U Series
CP-114 Series
CP-132 Series
CP-132U Series
CP-134U Series
CP-168U Series
Have Disk...
< Back
Next >
Cancel

Insert the driver CD into the CD-ROM drive, and then click on **OK** in the **Install from Disk** window. The system will automatically prompt you to restart the system. Click **Yes** to restart the system, or **No** if you want to reboot the system later.

Removing the Driver

To remove the CP-168U board driver, open the **Control Panel**, double click on the **Add/Remove Programs** icon, and then select the **Install/Uninstall** tab. Click on the **MOXA Smartio/Industio Driver** option and then click on **Add/Remove** to start the driver removal process.


Add/Remove Programs Properties
Install/Uninstall
Windows Setup
Startup Disk
To install a new program from a floppy disk or CD-ROM drive, click Install.
Install...
The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.
Avance AC'97 Audio
Intel(R) PRO Ethernet Adapter and Software
MOXA Smartio/Industio Driver
SiS 315_315E
Add/Remove...
OK
Cancel
Apply

Click on **Yes** on to confirm that you want to remove the driver.

Click on **OK** in the **Add/Remove Programs** Properties window.

Windows NT

Windows NT supports up to 256 serial ports, from COM1 to COM256. To fully utilize Windows NT's multi-process and multi-thread advanced features, pure 32-bit Windows NT device drivers were developed for MOXA's multiport serial boards. The drivers conform to the Win32 COMM API standard.

The Windows NT driver for MOXA's multiport serial boards supports the following products:

- **Universal PCI Boards:** CP-168U, CP-104UL, CP-104JU, CP-134U, CP-134U-I, CP-132UL, CP-132UL-I V2(CP-132U-I V1)
- **PCI Boards:** C168H/PCI, C104H/PCI, C104HS/PCI, CP-114, CP-114I, CP-114S, CP-114IS, CP-132, CP-132I, CP-132S, CP-132IS
- **ISA Boards:** C168H, C168HS, C168P, C104H, C104HS, C104P, CI-104J, CI-104JS, CI-134, CI-134I, CI-134IS, CI-132, CI-132I, CI-132IS
- **cPCI Boards:** CT-114I

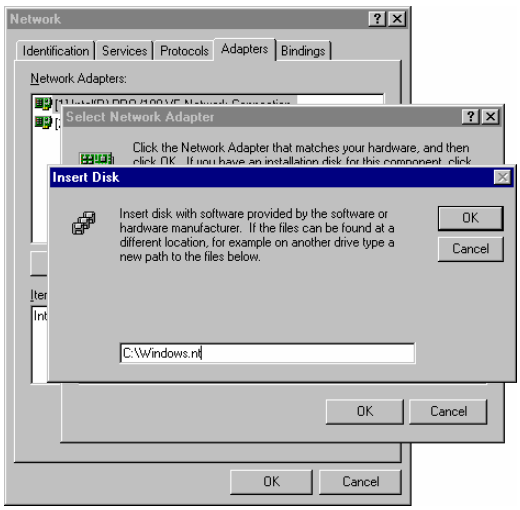
The following steps use CP-168U to illustrate.

Installing the Driver

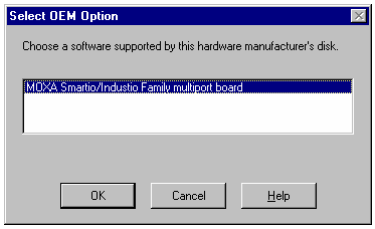
First Time Driver Installation

The following procedure shows how to install the CP-168U driver for the first time. First make sure the board or boards are already plugged into the system's PCI slot(s).

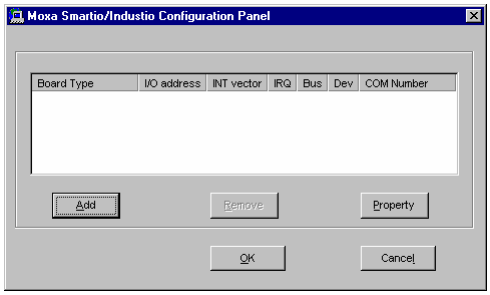
1. Log into NT as Administrator.
2. Copy the folder **Windows.nt** located under **\Software\WinNT** on the software CD, to your computer's hard disk (under the C: drive, for example).
3. Open the **Control Panel**, click on the **Network** icon, and then select the **Adapters** tab.
4. Click the **Add** button, and then the **Have Disk...** button in the **Select Network Adapter** window.
5. Specify the exact path of the driver diskette, C:\Windows.nt in the example shown here, and then click on **OK** to proceed.



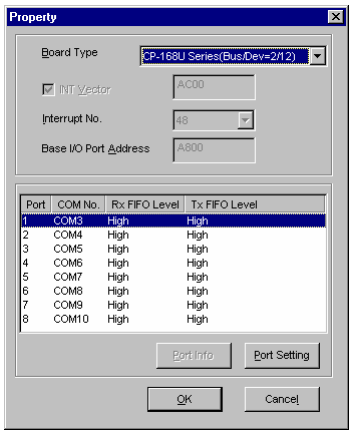
6. Select **MOXA Smartio/Industio Family multiport board** in the **Select OEM Option** window, and then click **OK** to begin installing the driver.



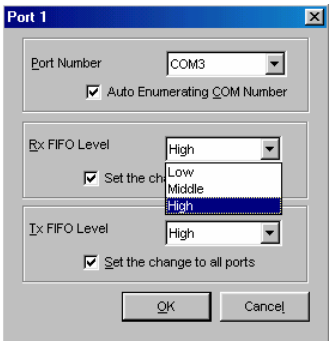
7. The **Moxa Smartio/Industio Configuration Panel** window appears. Click on the **Add** button to open the **Property** window to change port settings and advanced FIFO configuration that is done automatically by the system.



8. Select the just installed CP-168U board from the **Board Type** pull-down list, click on a specific port item, and then click on the **Port Setting** button to open the **Port X** window.



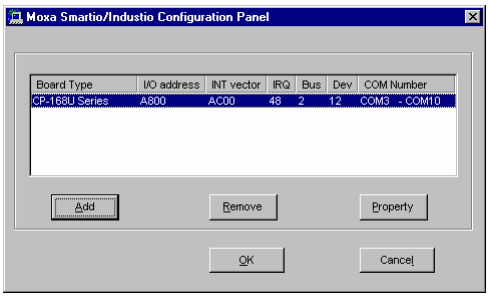
9. Select the ports' COM number from the **Port Number** pull-down list.
10. Check the **Auto Enumerating COM Number** check-box to have subsequent ports mapped to continuous COM numbers. For example, if COM3 is assigned to Port 1, then COM4 will be automatically assigned to Port 2.
11. Select an Rx FIFO Trigger from the Rx FIFO Level pull-down list. Rx FIFO trigger levels from High to Low are available, with the default set to High (120 bytes). Check **Set the change to all ports** check-box to apply the just defined Rx FIFO Trigger to all ports.
12. Select a Tx FIFO Size from the Tx FIFO Level pull-down list. Tx FIFO Levels from High to Low are available, with the default set to High (128 bytes). Check **Set the change to all ports** check-box to apply the just defined Tx FIFO Size to all ports.



	CP-134U V2/CP-134U-I V2		CP-134U/CP-134U-I	
	Tx FIFO	Rx FIFO	Tx FIFO	Rx FIFO
High	128	120	64	56
Middle	64	60	32	28
Low	1	1	1	1

Unit: Bytes

13. Click on **OK** in the Port X window to accept the port settings, and then click on **OK** in the **Property** window to complete port settings and return to the **MOXA Smartio/Industio Configuration Panel** window. The CP-168U board will now appear in the MOXA Smartio/Industio Configuration Panel window, as shown below.



14. Click on **OK** in the **MOXA Smartio/Industio Configuration Panel** to return to the Network window, and then click on **OK** to exit the Network window.
15. Restart the PC.

NOTE The driver configuration will NOT take effect until you restart the PC.

NOTE Double check that all CP-168U board components are connected and fastened tightly to ensure that the system and the driver can start up successfully.

Once the system restarts, you may check the event log issued by the MOXA driver to see if the board's ports have been initialized successfully.

Enter the **Administrative** group, click the **Event Viewer** icon, and then select **Log** and **System** to check for a message similar to **"MOXA CP-168U board, with first serial port COM3, has been enabled"** for each newly configured board.

NOTE If an error message similar to "Cannot find any configured MOXA Smartio/Industio series board!" pops up, refer to the Troubleshooting chapter for possible solutions.

Once the board and the driver are installed and the driver restarts successfully, you can begin to develop applications with the PComm library (see "**Serial Programming Tools**") or the Microsoft Win32 API. You can also use applications such as Terminal Emulator (see "**Serial Programming Tools**"), a PComm utility, or HyperTerminal, to transmit/receive data, as well as Remote Access Service to provide dial-up networking capabilities.

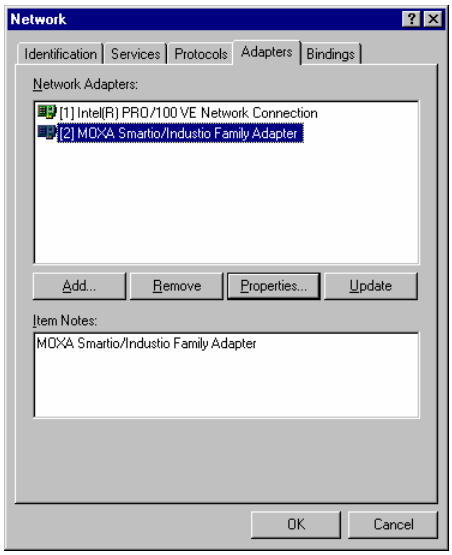
Configuring the Board and Ports

Re-Configuring Port Settings

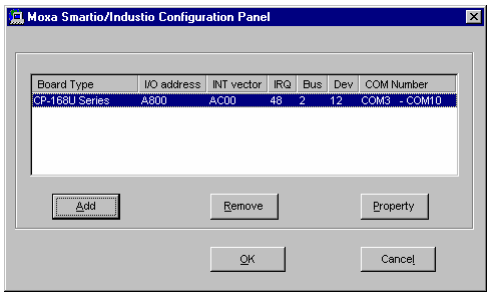
If the driver is already installed, and you only wish to re-configure the ports, refer to the following procedures. In addition to the procedures listed below, you may also click on **Start → Programs → MOXA Utility → MOXA Smartio/Industio Configuration Panel → Property**, and then refer to the instructions in the previous section, "**First Time Driver Installation**."

1. Open the **Control Panel**, click on the **Network** icon, and select the **Adapters** tab.

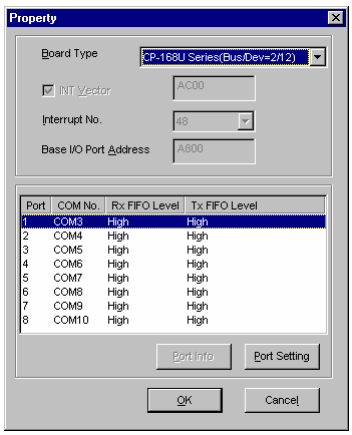
2. Click on MOXA Smartio/Industio Family Adapter from the Network Adapters list to highlight it, and then click on **Properties** to open the **MOXA Smartio/Industio Configuration Panel** window to change port settings and advanced FIFO configuration items.



3. Click on **Property** from the the **MOXA Smartio/Industio Configuration Panel** to open the Property window.



4. Next, refer to the instructions given in the previous section, "**First Time Driver Installation**" from the "**Windows NT**" section.

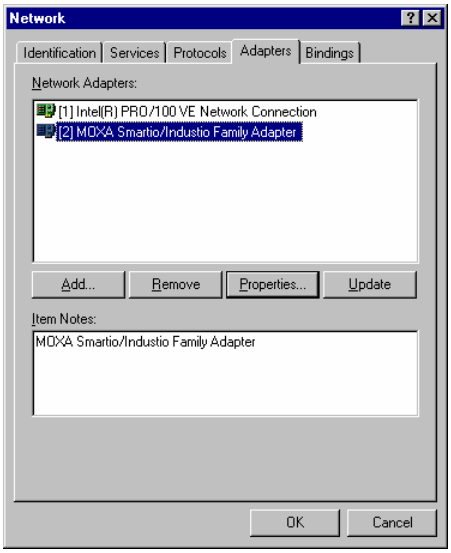


Configuring Another CP-168U Board

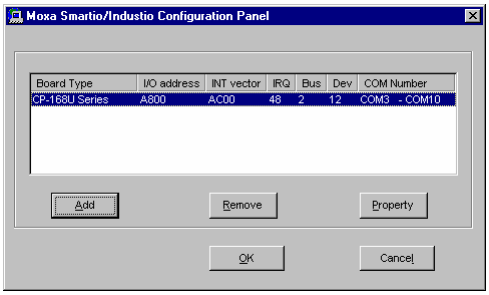
In this section, we explain how to configure another MOXA CP-168U board that is already installed. Up to four CP-168U boards can be installed in one system under Windows NT, provided sufficient system resources are available.

In addition to the procedures listed below, you may also click on **Start → Program → MOXA Utility → MOXA Smartio/Industio Configuration Panel → Add**, and then refer to the instructions from the previous section, "**Installing the Driver**."

1. Open the **Control Panel**, click on the **Network** icon, and select the **Adapters** tab.
2. Click on **MOXA Smartio/Industio Family Adapter** from the **Network Adapters** list.
3. Click on the **Properties** button to open the Moxa Smartio/Industio Configuration Panel window.



4. Next, refer to the instructions from the "**First Time Driver Installation**" subsection.



Removing an Existing CP-168U Board Configuration

First shut down your PC, and then physically remove the CP-168U board from the PCI or PCI-X slot. The next time you start up the PC, the system will automatically remove the configuration. There is no need to click the Remove button in the Moxa Smartio/Industio Configuration Panel window.

Updating the Driver

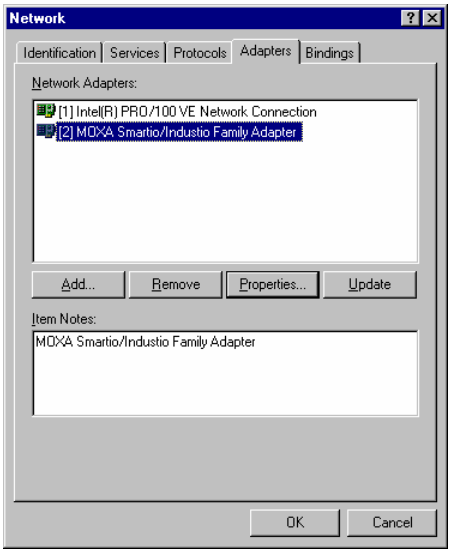
Take the following steps to update the CP-168U board driver.

1. Open **Control Panel**, click on the **Network** icon, and select the **Adapters** tab.
2. Click on MOXA Smartio/Industio Family Adapter from the Network Adapter list.
3. Click on the **Remove** button in the **Network** window.
4. Click on the **Close** button in the **Network** window.
5. Restart the system.
6. Refer to the instructions given in the "**First Time Driver Installation**" section to install the new driver.

Removing the Driver

To remove the CP-168U board driver:

1. Open the **Control Panel**, click on the **Network** icon, and select the **Adapters** tab.
2. Click on MOXA Smartio/Industio Family Adapter from the Network Adapters list.
3. Click on the **Remove** button in the Network window.



4. Click on the **Close** button to exit the **Network** window.
5. Restart the system to activate the new configuration.

DOS

MOXA DOS API-232 is a software package that assists users in developing and/or debugging serial communication programs. This section describes how to install the package, how to set up the driver, and how to load or unload the driver.

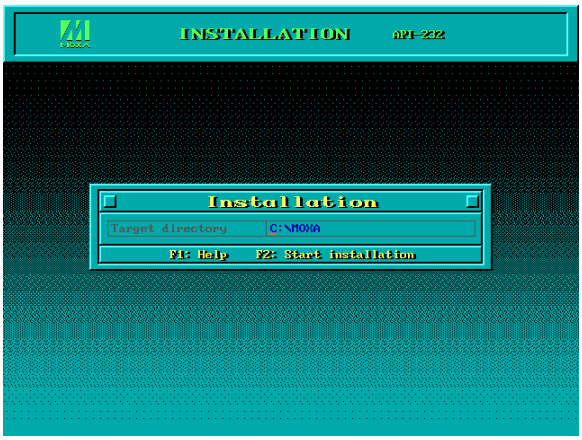
The DOS driver for MOXA's multiport serial boards supports the following products:

- **Universal PCI Boards:** CP-168U, CP-104UL, CP-104JU, CP-134U, CP-134U-I, CP-132UL, CP-132UL-I V2(CP-132U-I V1)
- **PCI Boards:** C168H/PCI, C104H/PCI, C104HS/PCI, CP-114, CP-114I, CP-114S, CP-114IS, CP-132, CP-132I, CP-132S, CP-132IS
- **ISA Boards:** C168H, C168HS, C168P, C104H, C104HS, C104P, CI-104J, CI-104JS, CI-134, CI-134I, CI-134IS, CI-132, CI-132I, CI-132IS
- **cPCI Boards:** CT-114I

The following Steps use CP-134U to illustrate.

Installing the Driver

1. Run the installation program, **DOSINST.EXE** under \Software\DOS on the software CD. Specify the target API-232 directory (e.g. **C:\MOXA**) where the software driver will be copied. Press **F2** to start the installation.



2. After the installation is complete, a message window will open to ask if you want to run the **SETUP.EXE** file. It is strongly recommended that you press **Y** to run this **SETUP.EXE** file.

INSTALLATION
API-232
Installation complete, 57 files copied.
After leaving this program, you have to run
C:\MOXA\BIN\SETUP.EXE
program to setup board & driver initial values.
Do you want to run SETUP.EXE now ?(Y/N)

Setting up the Driver

This section does not illustrate all of the functions that can be used when configuring the board. For more detailed information, press **F1** to see the on-line help instructions.

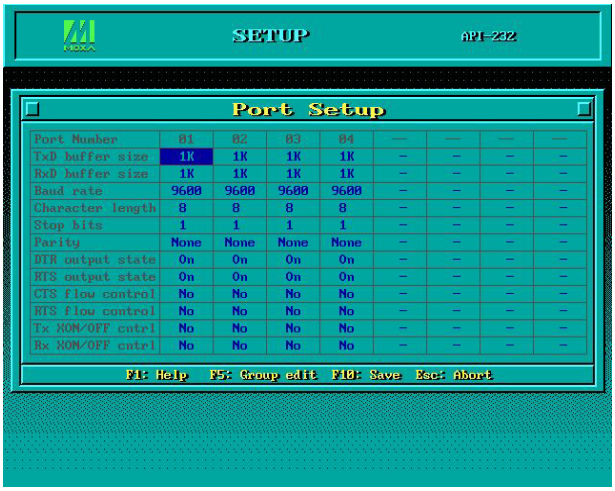
1. Run **BIN\SETUP.EXE**.

NOTE Running SETUP.EXE completes the configuration of the CP-134U Series board. Skip directly to step 4 if you do not need to change any settings or reconfigure the board.

2. Press **Enter** to select the proper model name (CP-134U Series in this case).

SETUP
API-232
Board Setup
Board no. Type Port no. I/O Address IRQ Bus/Dev no.
1 CP-134U Series 1-4 DC00 7 0 / 11
2 NONE –
3 NONE –
4 NONE –
F10: Save & Exit Esc: Exit PgDn: Port setup

3. Press **PgDn** to configure CP-134U's port settings. The values displayed when the window first opens are the default values configured when the driver is installed.


SETUP
API-232
Port Setup
Port Number 01 02 03 04 — — — —
TxD buffer size 1K 1K 1K 1K – – – –
RxD buffer size 1K 1K 1K 1K – – – –
Baud rate 9600 9600 9600 9600 – – – –
Character length 8 8 8 8 – – – –
Stop bits 1 1 1 1 – – – –
Parity None None None None – – – –
DTR output state On On On On – – – –
RTS output state On On On On – – – –
CTS flow control No No No No – – – –
RTS flow control No No No No – – – –
Tx XON/XOFF cntrl No No No No – – – –
Rx XON/XOFF cntrl No No No No – – – –
F1: Help F5: Group edit F10: Save Esc: Abort

4. Press **F10** to save the modifications and exit the SETUP program.

Legends

The most often used fields and functions are explained below.

Port number

This is the port ID of the port. The application software uses the port ID to refer to a port. Duplicate port numbers are not allowed.

Port numbers can be any number between 0 and 255, provided port numbers are unique. Also, be sure to define a port number for each port. In general, you should take into account the type of application program that will be used, and assign port numbers that make the programmer's job easier.

TxD buffer size

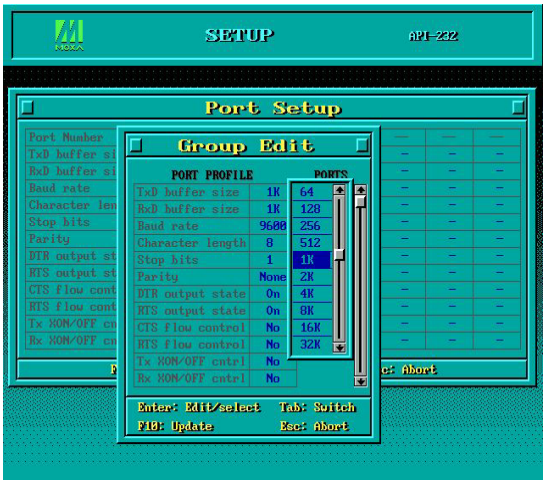
The transmission (output) buffer allocated by the system for each port.

RxD buffer size

The receiving (input) buffer allocated by the system for each port.

F5 Group Edit

This convenient function helps you edit the configuration of several ports at the same time.



Loading the Driver

After completing the setup process, you can load the driver by running BIN\DP-DRV.EXE from the DOS prompt. The driver will automatically detect the board you just installed. If one or more boards are detected, you will see a message similar to the one shown below:

Smartio/Industio Family DOS driver Version 1.5
Setup driver ...
CP-134U series (Bus= x ,Dev=y) : OK!
Device driver setup O.K.

This message indicates that the CP-134U Series driver was installed properly. You can now start running applications that support API-232 functions, or develop applications that use the API-232 library.

Unloading the Driver

To unload (release) the driver from memory, type **DP-DRV/Q** at the DOS prompt.

Linux

The Linux driver for MOXA's multiport serial boards supports the following products:

- **Universal PCI Boards:** CP-168U, CP-104UL, CP-104JU, CP-134U, CP-134U-I, CP-132UL, CP-132UL-I V2(CP-132U-I V1)
- **PCI Boards:** C168H/PCI, C104H/PCI, C104HS/PCI, CP-114, CP-114I, CP-114S, CP-114IS, CP-132, CP-132I, CP-132S, CP-132IS
- **ISA Boards:** C168H, C168HS, C168P, C104H, C104HS, C104P, CI-104J, CI-104JS, CI-134, CI-134I, CI-134IS, CI-132, CI-132I, CI-132IS
- **cPCI Boards:** CT-114I

The following steps use CP-168U to illustrate. Follow these steps to install the driver under Linux.

1. # mkdir moxa
   # cd moxa
   # tar xvfz mxser.tgz

2. #cd mxser
   #make clean; make install

3. # cd /moxa/mxser/driver
   # ./msmknod

4. # modprobe mxser

   (If you install an ISA board, type the command # insmod mxser ioaddr=0x???, 0x???, 0x???, 0x??? <- 1st ISA, 2nd ISA, 3rd ISA, 4th ISA)
   Using /lib/modules/2.4.20-8/kernel/drivers/char/mxser.o
   Warning: loading /lib/modules/2.4.20-8/kernel/drivers/char/mxser.o will taint the kernel: no license
   See http://www.tux.org/lkml/#export-tainted for information about tainted modules
   MOXA Smartio/Industio family driver version 1.7
   Tty devices major number = 30, callout devices major number = 35
   Found MOXA CP-168U series board(BusNo=2,DevNo=13)
   Module mxser loaded, with warnings

5. You can use the Moxa diagnostic utility to verify the driver status.
   # cd /moxa/mxser/utility/diag
   # ./msdiag
   == MOXA Smartio/Industio Family Multiport Board Status Utility(1.1) ==
   Tty Device Major Number= 30.
   Callout device Major Number= 35.
   Board 1 : CP-168U series (BusNo=2, DevNo=13)
   Port 1: 0xac00, max. baud rate = 230400 bps.
   Port 2: 0xac08, max. baud rate = 230400 bps.
   Port 3: 0xac10, max. baud rate = 230400 bps.
   Port 4: 0xac18, max. baud rate = 230400 bps.
   Port 5: 0xac20, max. baud rate = 230400 bps.
   Port 6: 0xac28, max. baud rate = 230400 bps.
   Port 7: 0xac30, max. baud rate = 230400 bps.
   Port 8: 0xac38, max. baud rate = 230400 bps.

6. You can use the Moxa terminal utility to test tty ports.
   # cd /moxa/mxser/utiltiy/term
   # ./msterm

4

Serial Programming Tools

Moxa supports a class of easy to use, yet powerful serial programming libraries and communication troubleshooting utilities under Windows NT/2000/XP/2003 and Windows 95/98. Use these MOXA Serial Programming Tools to decrease your software development time.

In the following sections, we describe the installation of the library, and the utilities supported for various programming platforms.

PComm, a professional serial comm tool for PCs, is a software package that runs under Windows NT/2000/XP/2003 and Windows 95/98. PComm provides:

- A powerful serial communication library for easy programming in the most popular programming languages. The serial communication library is useful for developing applications for data communications, remote access, data acquisition, and industrial control under Windows NT/2000/XP/2003 or Windows 95/98. It is a simpler solution compared to the more complex Windows Win32 COMM API.
- Useful utilities such as diagnostic, monitor, and terminal emulator.
- Illustrative sample programs.
- Comprehensive on-line documentation.

PComm Installation

To install PComm, run \Setup.exe from the diskette. Note that the PComm diagnostic and monitor utilities are for MOXA boards only. MOXA Windows 95/98/NT/2000/XP/2003 device drivers, as well as MOXA boards are required. The drivers are installed separately, with details given in the "Software Installation" chapter.

After PComm is successfully installed, click on **Start**, select **Program Files**, and then PComm Lite group to select a list of utilities and documents.

PComm Programming Library

The serial communication library assists you in developing serial communications programs for any COM port that complies with Microsoft Win32 API. It facilitates the implementation of multi-process and multi-thread serial communication programs and substantially reduces development time.

This serial communication library provides a complete function library and sample programs for Visual C++, Visual Basic, and Borland Delphi. To view detailed function descriptions and sample programs, click on **Start → Program → PComm Lite → PComm Lib Help**, **PComm Porting Notes** or **PComm Programming Guide**, or refer to the sample programs in the PComm directory.

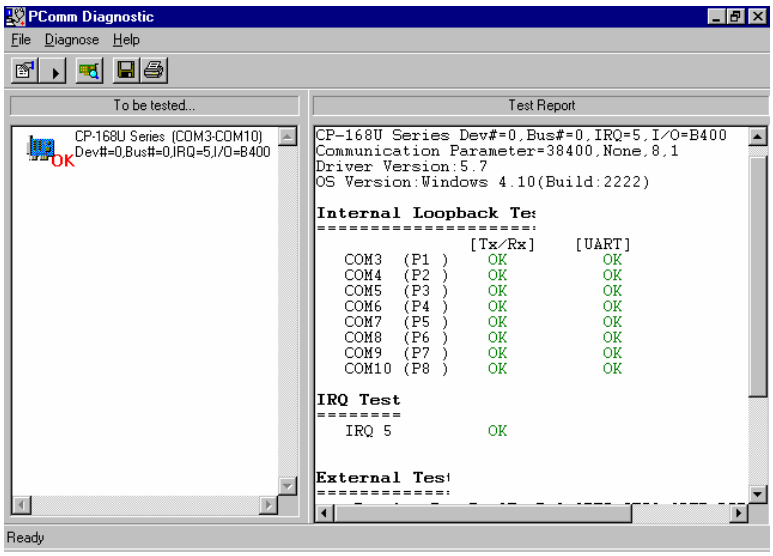
Utilities

In this section, we give brief descriptions of each utility. For more information about these utilities, see the on-line help from the software diskette.

Diagnostic (for MOXA boards only)

A convenient diagnostic program, ONLY for MOXA boards and ports, provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, DTR/DCD, etc. It allows the user to check the function of both software and hardware.

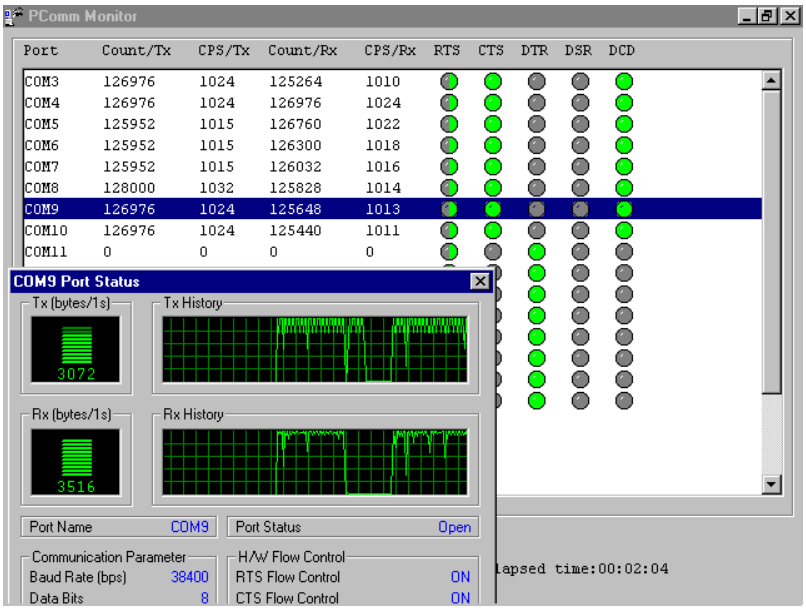
To run the Diagnostic program, click on **Start → Program → PComm Lite → Diagnostic**. A typical test report for the CP-168U Series board is shown below.



Monitor (for MOXA boards under Windows NT/2000/XP/2003)

A useful port status monitoring program allows you to monitor data transmission of selected MOXA COM ports. It monitors data transmission/receiving throughput, and communication line status, with data updated and displayed on the screen at regular time intervals. Click on a specific port to see a graph of the current communication parameters and status of that port.

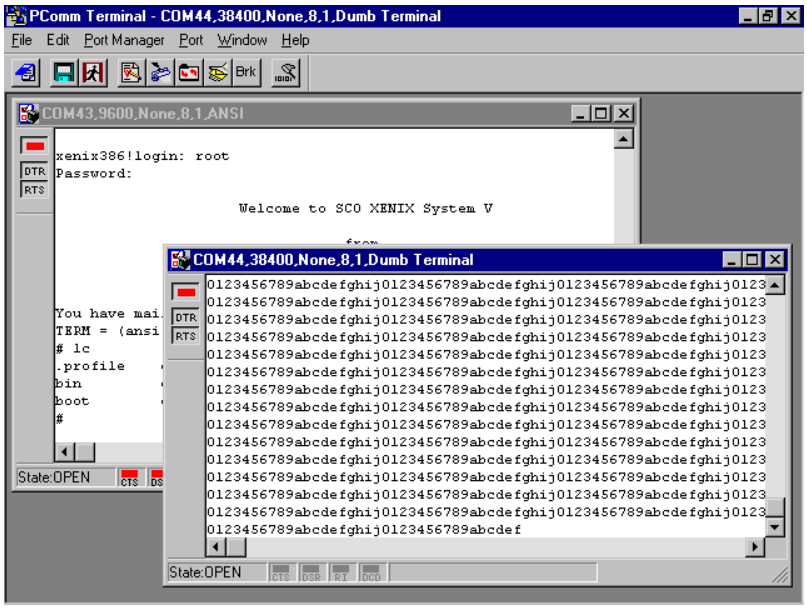
To run the Monitor program, click on **Start → Program → PComm Lite → Monitor**.



Terminal Emulator

Terminal Emulator can be used to connect to various ports to see if data transmission is functioning correctly. Terminal Emulator features multi-windows, and supports VT100 and ANSI terminal types. You can transfer data interactively, send patterns periodically, and transfer files using ASCII, XMODEM, YMODEM, ZMODEM, and KERMIT protocols.

To run Terminal Emulator, click on **Start → Program → PComm Lite → Terminal Emulator**.



RS-485 Programming

If you intend to use your CP-134U Series board for RS-485 applications, refer to the RS-485 programming guide below, and also see the Chapter 5, "Connection Cables and Cable Wiring," for more details about RS-485 operation.

The CP-134U Series only supports 2-wire half-duplex RS-485 communication, in which case the data +/- pins are used for both data transmitting and receiving, depending on the mode selected. The modes available are ADDC™ (Automatic Data Direction Control), or By RTS.

ADDC™ (Automatic Data Direction Control)

The ADDC™ scheme is the best solution for RS-485 applications. To use ADDC™ mode, set the mode switch to the **ON** position.

Under this mode, extra code is not required to control data transfer (both data transmitting and receiving), since it is automatically managed with the board's built-in intelligent hardware mechanism. This means that **RS-485 programming using ADDC™ mode is just as simple and straightforward as RS-232 or RS-422 programming**.

How to transmit and receive data for Windows 95/98NT/2000/XP/2003

In order to acquire precise timing control for 2-wire RS-485 transmission, we recommend that you configure your CP-134U Series ports as described below.

There are 2 solutions available for controlling 2-wire RS-485 transmission.

Solution 1

The following method is commonly used for 2-wire RS-485 transmission:

```
sio_SetWriteTimeouts(port, 0);   /* Set sio_write() into block mode if for Windows NT and
                                    Windows 95/98 */
sio_RTS(port, 1);                /* Turn on RTS signal. The RS-485 port is ready for
                                    transmitting data. */
sio_write(port, buff, 10);       /* Write 10 byte characters in "buff". The function blocks
                                    until the last character is transmitted */
sio_RTS(port, 0);                /* Turn off RTS signal. The RS-485 port is ready for
                                    receiving data. */
sio_read(port, buff, 10);        /* Read 10 bytes */
```

Solution 2

The PComm or API-232 library includes a dedicated RS-485 function that integrates the functions described above in solution 1 into one function:

```
sio_putb_x(port, buff, tick );   /*  1. Turn on RTS and ready for transmitting data.
                                     2. Send data.
                                     3. Wait for tick time.
                                     4. Turn off RTS and ready for receiving data. */
```

For more information on these functions, refer to the PComm library's on-line Help file for Windows 95/98/NT/2000/XP/2003.

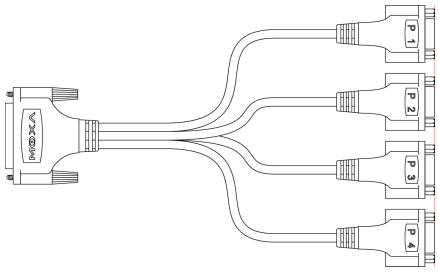
5

Connection Cables and Cable Wiring

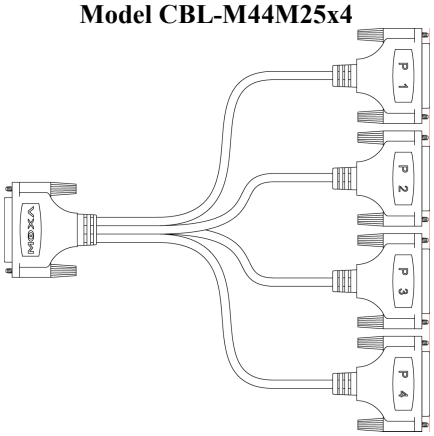
Pinouts and Cable Wiring

CP-134U Series boards have one DB44 female port on the board that sends signals to four independent serial ports. The **DB44 (Male) to 4 x DB9 (Male) cable** (Model CBL-M44M9x4) or **DB44 (Male) to 4 x DB25 (Male)** (Model CBL-M44M25x4), both of which are available from Moxa, can be used to separate the signals coming from the board into the signals for the four different ports.

Model CBL-M44M9x4



Model CBL-M44M25x4



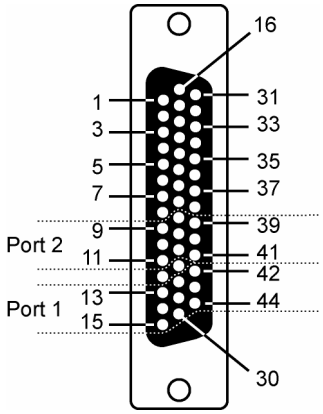
In the following subsections, we include detailed pinout diagrams for all of the serial interfaces supported by the CP-134U series boards.

RS-232 Interface

When ports 1 and/or 2 are configured for the RS-232 interface, the pinouts are as shown below.

CP-134U (RS-232)

Port 1		Port 2	
13	TxD	9	TxD
14	RxD	10	RxD
15	RTS	11	RTS
28	CTS	24	CTS
29	DTR	25	DTR
30	DSR	26	DSR
42	DCD	39	DCD
44	GND	41	GND

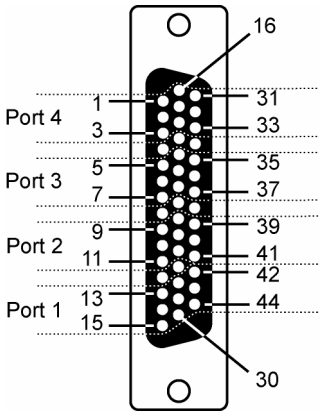


RS-422 Interface

The RS-422 standard uses a balanced voltage digital interface to allow 9600 bps communication over cables of up to 4000 feet in length. Ten receivers can be connected to any one driver for broadcasting systems.

CP-134U (RS-422)

Port 1		Port 2		Port 3		Port 4	
13	RxD+(B)	9	RxD+(B)	5	RxD+(B)	1	RxD+(B)
14	TxD+(B)	10	TxD+(B)	6	TxD+(B)	2	TxD+(B)
15	RTS+(B)	11	RTS+(B)	7	RTS+(B)	3	RTS+(B)
28	CTS+(B)	24	CTS+(B)	20	CTS+(B)	16	CTS+(B)
29	RxD-(A)	25	RxD-(A)	21	RxD-(A)	17	RxD-(A)
30	RTS-(A)	26	RTS-(A)	22	RTS-(A)	18	RTS-(A)
42	TxD-(A)	39	TxD-(A)	35	TxD-(A)	31	TxD-(A)
43	CTS-(A)	40	CTS-(A)	36	CTS-(A)	32	CTS-(A)
44	GND	41	GND	37	GND	33	GND



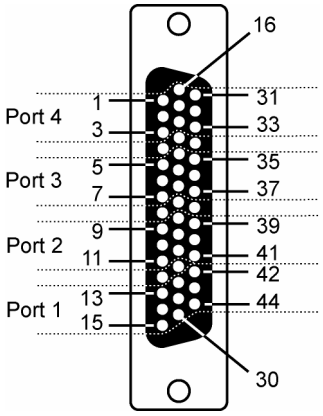
RS-485 Interface

The RS-485 standard is an enhanced version of the RS-422 balanced line standard. It allows multiple drivers and receivers to work on a multidrop network. A maximum of 32 drivers and 32 receivers can be set up on a multidrop network.

The CP-134U Series supports both 2-wire half-duplex and 4-wire full-duplex RS-485 communications. In 2-wire RS-485, Data+/- pins are used for both data transmitting and receiving, depending on the RTS signal.

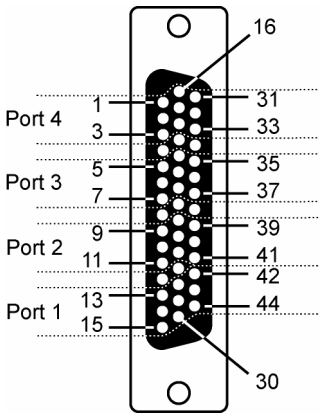
CP-134U (4-wire RS-485)

Port 1		Port 2		Port 3		Port 4	
13	RxD+(B)	9	RxD+(B)	5	RxD+(B)	1	RxD+(B)
14	TxD+(B)	10	TxD+(B)	6	TxD+(B)	2	TxD+(B)
29	RxD-(A)	25	RxD-(A)	21	RxD-(A)	17	RxD-(A)
42	TxD-(A)	39	TxD-(A)	35	TxD-(A)	31	TxD-(A)
44	GND	41	GND	37	GND	33	GND



CP-134U (2-wire RS-485)

Port 1		Port 2		Port 3		Port 4	
13	Data+(B)	9	Data+(B)	5	Data+(B)	1	Data+(B)
29	Data-(A)	25	Data-(A)	21	Data-(A)	17	Data-(A)



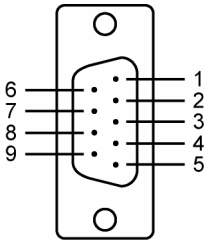
Individual Port Pinouts

In this subsection we give the pinouts for individual ports. Refer to the DB9 pinout diagrams if you are using the Model M44M9x4 cable, and refer to the DB25 pinout diagrams if you are using the Model M44M25x4 cable.

RS-232

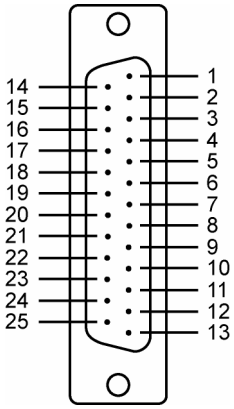
DB9

Pin No.	Signal
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS



DB25

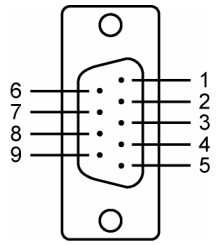
Pin No.	Signal
2	TxD
3	RxD
4	RTS
5	CTS
6	DSR
7	GND
8	DCD
20	DTR



RS-422

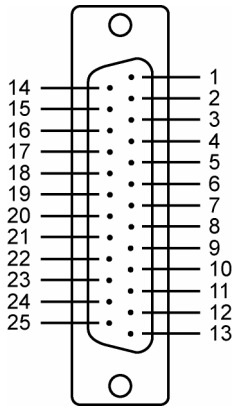
DB9

Pin No.	Signal
1	TxD-(A)
2	TxD+(B)
3	RxD+(B)
4	RxD-(A)
5	GND
6	RTS-(A)
7	RTS+(B)
8	CTS+(B)
9	CTS-(A)



DB25

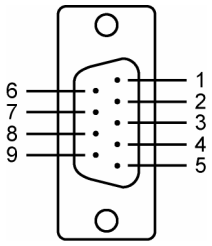
Pin No.	Signal
2	RxD+(B)
3	TxD+(B)
4	RTS+(B)
5	CTS+(B)
7	GND
22	CTS-(A)
20	RxD-(A)
8	TxD-(A)
6	RTS-(A)



RS-485 (4-wire)

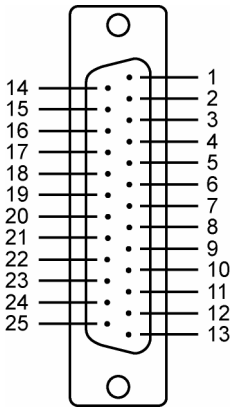
DB9

Pin No.	Signal
1	TxD-(A)
2	TxD+(B)
3	RxD+(B)
4	RxD-(A)
5	GND



DB25

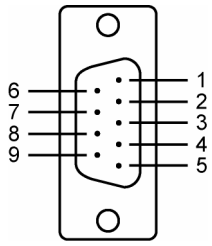
Pin No.	Signal
2	RxD+(B)
3	TxD+(B)
7	GND
20	RxD-(A)
8	TxD-(A)



RS-485 (2-wire)

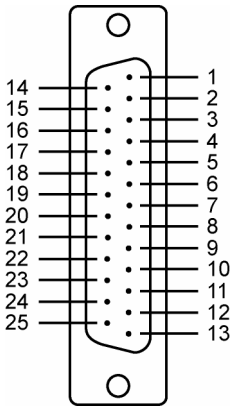
DB9

Pin No.	Signal
4	Data-(A)
3	Data+(B)
5	GND



DB25

Pin No.	Signal
2	Data+(B)
7	GND
20	Data-(A)

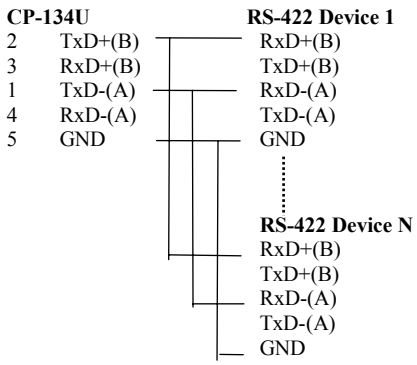


Cable Wiring—DB9

RS-422 Point-to-point

CP-134U			RS-422 Device
2	TxD+(B)	———	RxD+(B)
1	TxD-(A)	———	RxD-(A)
3	RxD+(B)	———	TxD+(B)
4	RxD-(A)	———	TxD-(A)
5	GND	———	GND

RS-422 Broadcasting



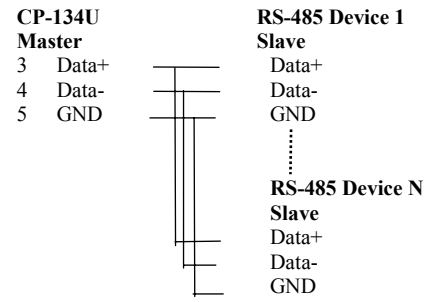
CP-134U – RS-422 with Handshaking

CP-134U			RS-422 Device
2	TxD+(B)	———	RxD+(B)
1	TxD-(A)	———	RxD-(A)
3	RxD+(B)	———	TxD+(B)
4	RxD-(A)	———	TxD-(A)
5	GND	———	GND
7	RTS+(B)	———	CTS+(B)
6	RTS-(A)	———	CTS-(A)
8	CTS+(B)	———	RTS+(B)
9	CTS-(A)	———	RTS-(A)

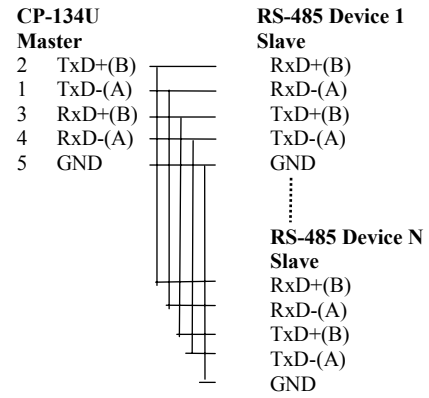
CP-134U – 2-wire RS-485

CP-134U			RS-485 Device
3	Data+(B)	———	Data+(B)
4	Data-(A)	———	Data-(A)
5	GND	———	GND

Multidrop 2-wire RS-485 (half-duplex)



Multidrop 4-wire RS-485 (full-duplex)



See the section "**RS-485 Programming**" in the "**Serial Programming Tools**" chapter for more details on RS-485 programming.

Impedance Matching and Termination Resistors

When using RS-422/485 serial communications, an electrical signal that travels through two different resistance junctions in a transmission line will sometimes give rise to signal reflection due to the impedance mismatch. Signal reflection causes signal distortion, which in turn contributes to communication errors. The solution to this problem is to establish the same impedance at the ends of the transmission line, as in the line itself, by terminating the ends of the line with resistors.

6

Troubleshooting

Common CP-134U Series problems and possible solutions are listed below. If you cannot find a solution to your problem in this chapter, contact your dealer or Moxa for help. For your convenience, a standard **Problem Report Form** is given at the end of this manual.

General Troubleshooting

1. **The MOXA PCI board cannot be detected by the MOXA driver while installing the driver.**

   Hardware causes and solutions:

   a. The board is not installed in the computer. Please install it.

   b. The board is not properly plugged into the system. If this is the case, re-plug the board into a 32-bit PCI slot. It is also possible that a slot has malfunctioned. In this case, try other slots until you find one that works.

   c. The motherboard does not have an available IRQ for the CP-134U Series board. In this case, enter the BIOS and make sure there is an availalbe IRQ under PCI/PnP settings.

2. **The MOXA board and driver are activated but cannot transfer (transmit/receive) data.**

   Hardware Causes and Solutions:

   a. Make sure the cable wiring is connected correctly. Refer to the "**Connection Cable and Cable Wiring**" chapter for correct cable connections.

   b. The cable or the board are probably defective. Try other ports, cables, or boards to verify this, or use th PComm Diagnostic utility to test the MOXA board and port conditions. If Diagnostic reports an error, replace the faulty components.

   Software Causes and Solutions:

   a. CP-134U Series boards will check the line status (CTS) before transmitting data if the RTS/CTS flow control feature is set to Enable in the configuration or application program. Refer to the Connection Cables and Cable Wiring chapter for proper wiring diagrams, and check the line status of the suspected port using the diagnostic LED indicators on the mini tester.

   b. The board control application may be incompatible with the corresponding API of the operating system. To check this problem, run another existing and known good application or use the utilities provided by Moxa (such as PComm Terminal emulator), or other third party utilities, such as HyperTerminal under Windows NT and Windows 95/98.

Windows NT

This section is specifically for troubleshooting under Windows NT. For general problems and solutions, see the previous section, "General Troubleshooting."

1. **After the system reboots, the error message "Another driver in the system, which did not report its resources, has already claimed the interrupt used by xxx." appears in the Event Log.**

   This indicates the MOXA board was found, but the IRQ is conflicting with another adapter. Please check the PCI BIOS IRQ settings first and then select an IRQ that is available.

2. **After the system reboots, the error message "Cannot find any configured MOXA *Smartto*/*Industto* Series board!" appears in the Event Log.**

   Make sure the PCI board is seated firmly in the expansion slot.

3. **The COM number of the CP-134U Series conflicts with others.**

   The COM numbers of different boards happen to be the same. Try changing the COM number mappings.

4. **Windows NT system panic (blue screen).**

   The possible reason is an IRQ or memory conflict with other ISA Bus adapters, like LAN and SCSI boards, or the system BIOS. Refer to the corresponding problem in the previous section, "General Troubleshooting," for possible solutions.

Windows 95/98

This section is specifically for troubleshooting under Windows 95/98. For general problems and solutions, see the section, "General Troubleshooting."

1. **The system fails to find the CP-134U Series board!**
   - The board(s) is (are) not plugged properly.
   - The slot the boards are plugged into is defective. Try another slot until you find one that works.
   - The board might be defective.

2. **After the system reboots, the error message "CP-134U Series (BusNo=x, DevNo=x, Port1=COMx) interrupt number is invalid!" appears.**

   This indicates that the MOXA board was found, but the IRQ conflicts with another adapter. Make sure the MOXA board's IRQ does not conflict with other adapters' IRQ. Check the PCI BIOS IRQ settings and select an available IRQ for MOXA boards.

A

Technical Reference

Specifications

Bus interface	32-bit PCI	
Number of ports	4	
Max. No. of boards	4	
I/O address	Assigned by PCI BIOS	
IRQ	Assigned by PCI BIOS	
Comm. controller	MOXA UART (16C550C compatible)	
Transmission speed	50 bps to 230.4 Kbps (CP-134U, CP-134U-I) 50 bps to 921.6 Kbps (CP-134U V2, CP-134U-I V2)	
Data bits	5, 6, 7, 8	
Stop bits	1, 1.5, 2	
Parity	none, even, odd, space, mark	
Data signals	RS-232	TxD, RxD, DTR, DSR, RTS, CTS, GND
	RS-422	TxD+(B)/-(A), RxD+(B)/-(A), RTS+(B)/-(A), CTS+(B)/-(A), GND
	4-wire RS-485	TxD+(B)/-(A), RxD+(B)/-(A), GND
	2-wire RS-485	Data+(B)/-(A), GND
Connectors	1 DB44 female port	
Optical isolation	Max. 2000V (CP-134U-I, CP-134U-I V2)	
Surge protection	ESD max. 16000V	(CP-134U, CP-134U-I, CP-134U V2, CP-134U-I V2)
Termination Resistor	120 Ω	
Operating temperature	0 – 55°C	
Power requirements	CP-134U	308 mA (+5V)
	CP-134U V2	180 mA (+5V)
	CP-134U-I	880 mA (+5V)
	CP-134U-I V2	850 mA (+5V)
Dimensions (W × D)	CP-134U	135 × 110 mm
	CP-134U V2	120 × 82.5 mm
	CP-134U-I	160 × 120 mm
	CP-134U-I V2	120 × 115 mm
Operating Systems	Windows 95/98/NT/2000/XP/2003, Linux, DOS, FreeBSD	

PCI

The 32-bit CP-134U Series board complies with PCI Specifications 2.1. The IRQ and I/O address hardware configuration is automatically assigned by the PCI BIOS. This means that you must **first plug in the board** before installing the driver software.

As opposed to ISA slots, different PCI slots in the same PC may have different bus numbers and device numbers with respect to the PCI specifications. The same PCI board will have different system configurations if switched to a different PCI slot; this is called **slot-sensitive** or **slot-dependent**. This may also apply to PCI slots in a PC with a different motherboard, which may use **different device number sets**. For example, some use 17, 18, 19, and 20 for identifying the respective PCI slots, but some use 11, 12, 13, and 14.

Due to **slot-dependency**, it is necessary to **re-configure the driver software** once the board is plugged into different PCI slots.

Up to 4 CP-134U Series boards are allowed in one system. When installing more than one board, **please remember the order the boards are installed** to distinguish the installed boards from each other.

Return Procedure

For product repair, exchange, or refund, the customer must:

- Provide evidence of original purchase.
- Obtain a Product Return Agreement (PRA) from the sales representative or dealer.
- Fill out the Problem Report Form (PRF). Include as much detail as possible for a shorter product repair time.
- Carefully pack the product in an anti-static package, and send it, pre-paid, to the dealer. The PRA should be visible on the outside of the package, and include a description of the problem, along with the return address and telephone number of a technical contact.